
FINAL REPORT

Prepared for
The Bill & Melinda Gates Foundation
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Seattle, WA 98109

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July 2016
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<td>Combination HIV prevention</td>
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<tr>
<td>CI</td>
<td>confidence interval</td>
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<tr>
<td>CROI</td>
<td>Conference on Retroviruses and Opportunistic Infections</td>
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<tr>
<td>DCC</td>
<td>Drug Control Commission</td>
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<td>DHS</td>
<td>demographic health survey</td>
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<td>DiCES</td>
<td>drop-in centers</td>
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<tr>
<td>DOT</td>
<td>Directly Observed Therapy</td>
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<tr>
<td>DVA</td>
<td>South African Domestic Violence Act</td>
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<tr>
<td>FGD</td>
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<tr>
<td>FSW</td>
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<tr>
<td>GBV</td>
<td>gender-based violence</td>
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<td>HBTC</td>
<td>home-based testing and counseling</td>
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<td>HIV</td>
<td>human immunodeficiency virus</td>
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<td>HIVR4P</td>
<td>HIV Research for Prevention</td>
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<td>HIV testing and counseling</td>
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<td>IAC</td>
<td>International AIDS Conference</td>
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<td>IAS</td>
<td>International AIDS Society</td>
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<td>ICASA</td>
<td>International Conference on AIDS and STIs in Africa</td>
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<tr>
<td>IDI</td>
<td>in-depth interview</td>
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<tr>
<td>IMAT</td>
<td>integrated methadone and antiretroviral therapy</td>
<td></td>
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<td>IP</td>
<td>index participant</td>
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<tr>
<td>KNASP</td>
<td>Kenya National AIDS Strategic Plan</td>
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<tr>
<td>LGBT</td>
<td>lesbian, gay, bisexual, transgender</td>
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<tr>
<td>LVCT</td>
<td>Liverpool Voluntary Counseling and Testing</td>
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<tr>
<td>Acronym</td>
<td>Definition</td>
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<tr>
<td>MARP</td>
<td>most-at-risk population</td>
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<tr>
<td>MMKA</td>
<td><em>Mzake ndi Mzake Kuunikira Achinyamata</em></td>
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<tr>
<td>MMT</td>
<td>methadone maintenance therapy</td>
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<tr>
<td>MoHSW</td>
<td>Ministry of Health and Social Welfare</td>
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<td>MOM</td>
<td>Moonlight Outreach Model</td>
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<td>MSM</td>
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<td>MUHAS</td>
<td>Muhimbili University and Hospital of Allied Sciences</td>
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<td>NAC</td>
<td>National AIDS Council</td>
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<td>NGO</td>
<td>nongovernmental organization</td>
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<tr>
<td>NSP</td>
<td>needle and syringe program</td>
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<tr>
<td>OR</td>
<td>odds ratio</td>
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<tr>
<td>OST</td>
<td>opioid substitution therapy</td>
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<tr>
<td>PEPFAR</td>
<td>U.S. President's Emergency Plan for AIDS Relief</td>
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<tr>
<td>PITC</td>
<td>provider-initiated testing and counseling</td>
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<td>POC</td>
<td>point of care</td>
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<tr>
<td>PopART</td>
<td>Population Effects of Antiretroviral Therapy to Reduce HIV Transmission study</td>
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<tr>
<td>PrEP</td>
<td>pre-exposure prophylaxis</td>
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<tr>
<td>PWID</td>
<td>people who inject drugs</td>
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<tr>
<td>RDS</td>
<td>respondent-driven sampling</td>
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<tr>
<td>SADC</td>
<td>South African Development Community</td>
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<tr>
<td>SAHMS</td>
<td>South Africa Health Monitoring Survey</td>
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<tr>
<td>SAPPH-Ire</td>
<td>Sisters Antiretroviral therapy Programme for Prevention of HIV—an Integrated Response</td>
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<tr>
<td>SD</td>
<td>standard deviation</td>
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<td>SEARCH</td>
<td>Sustainable East Africa Research in Community Health</td>
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<tr>
<td>SMS</td>
<td>Short Message System</td>
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<tr>
<td>SRH</td>
<td>sexual and reproductive health</td>
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<tr>
<td>STAR</td>
<td>Self-Testing in Africa program</td>
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<tr>
<td>STI</td>
<td>sexually transmitted infection</td>
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<tr>
<td>TAD</td>
<td>take-away dose</td>
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<tr>
<td>TB</td>
<td>tuberculosis</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>UNFPA</td>
<td>United Nations Population Fund</td>
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<tr>
<td>UNODC</td>
<td>United Nations Office on Drugs and Crime</td>
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<tr>
<td>VMMC</td>
<td>voluntary medical male circumcision</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>ZENITH</td>
<td>Zimbabwe Study for Enhancing Testing and Improving Treatment of HIV in Children</td>
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Executive Summary

Despite the tremendous progress that has been made in the AIDS response in the past 15 years, an estimated 2 million people were newly infected with HIV and 36.9 million people were living with HIV in 2014. Effective tools now exist for the prevention and treatment of HIV. To that end, UNAIDS has established the ambitious “90-90-90” target to end the AIDS epidemic. The first element of this target is that by 2020, 90% of all people living with HIV will know their HIV status. HIV testing is the critical first step in accessing prevention, care, and treatment services, and represents the biggest gap in the 90-90-90 target for HIV elimination. Globally, it is estimated that only 48% of people living with HIV are aware of their serostatus, despite wide availability of HIV testing services (HTS). To meet the established target for HIV elimination, we must begin to look at which strategies can support the first element of the 90-90-90 target.

As a preliminary step toward addressing the testing gap, this report presents a “landscape” review of HTS. It focuses on multiple key populations—including female sex workers (FSW), men who have sex with men (MSM), people who inject drugs (PWID), and adolescent girls and young women (AGYW), as well as interventions specifically targeting men—and reviews HTS among these populations in six focal countries: Kenya, Malawi, South Africa, Tanzania, Zambia, and Zimbabwe.

ES.1 Objectives

The specific objectives of this review are:

1. To summarize the policies in the six focal countries directly and indirectly related to HTS for the target populations.
2. To identify (a) the primary barriers and facilitators, and (b) the strategies used to improve HTS in the target populations as identified in the literature.
3. To determine the relative importance of barriers and facilitators to HTS for the target populations identified through the review.
4. To determine whether the data support generalizability across countries in the identified barriers and facilitators.
5. If the challenges to increasing uptake of HTS are fairly well defined, to identify what programs, interventions, and delivery models have been found to have the greatest impact.
6. To summarize ongoing programs and research among the target populations, to evaluate the need for rollout and/or scale-up of these programs and policies, and determine whether the data suggest that particular programs or policies should not be rolled out and/or scaled up.
7. To make recommendations based on this review about the prioritized primary research gaps to informing global and national policy and programming among the target populations in the focal countries.
ES.2 Methods

To meet the objectives of this review, we conducted three distinct data collection activities. To address Objective 1, we conducted an extensive review of the legal and policy framework related to our target populations and their access to HTS. To address Objectives 2 through 5, we conducted a systematic review of the peer-reviewed literature. We then reviewed a series of gray literature sources to capture relevant research and programming that may not have been published in a peer-reviewed format. Finally, to address Objective 6, we conducted interviews with key informants to learn more about research and programming that may be planned, is currently underway, or that has not been reported through the available published or gray literature. Each data collection method was reviewed for how it pertains to the target populations of FSW, MSM, PWID, AGYW, and men in the six focal countries. Based on these data, we summarized the findings and made recommendations for the way forward in HTS research and programming in these populations (Objective 7).

ES.3 Policy Review

Review of policy highlighted that all six focal countries have laws that criminalize key populations and people living with HIV. South Africa’s policies were the most liberal, and it is the only country that did not explicitly criminalize MSM. However, stigma and discrimination against same-sex sexual conduct is still pervasive in South Africa, as in all of the other focal countries. All of the countries, with the exception of South Africa, criminalize transmission and exposure of HIV; however, other laws in South Africa have nonetheless been used to criminalize transmission. All of the countries’ HIV strategies address vulnerable populations and settings; however, only Kenya and Tanzania address PWID. Criminalization increases the likelihood that MSM, PWID, and sex workers will experience violence from law enforcement officials and discrimination by service providers and other citizens. Additionally, when these identities intersect (e.g., a person identifies as both a PWID and a sex worker), vulnerabilities increase. Criminalization, discrimination, and violence inhibit access to HTS.

ES.4 Female Sex Workers

Review of the literature identified a moderate body of published research around HTS among FSW. The majority of the published literature was conducted in Kenya, although we identified research from all focal countries, with the exception of Zambia. Across studies, a very high proportion of FSW had ever tested for HIV. However, data on recent and regular testing were limited. When measured, knowledge of HIV status among those HIV-infected was suboptimal, and well below the UNAIDS 90% target.

Stigma emerged as the primary barrier to HIV testing for FSW. This was cited by both FSW and by providers who serve them. Discrimination, mistreatment, and even denial of services was cited in numerous studies across settings and countries, implying a level of
generalizability of this barrier. Lack of confidentiality was another important barrier cited. Other barriers included logistics, in the form of transportation or opportunity costs, alcohol use, and age. Women who had children were more likely to have ever tested for HIV. Data were lacking around facilitators and barriers to linkage to post-test services, and this represents an important research gap.

Strategies to address barriers to testing for FSW have largely involved providing targeted and dedicated services, in a nondiscriminatory environment. Another common strategy is to provide services at times and locations more convenient for FSW. Research suggests there is potential for improving testing and linkage through cross-agency collaboration, involving key stakeholders in intervention design—including FSW themselves—and providing combination health services, where testing, prevention, care and treatment services can be accessed at one location.

Though our literature review did not find any completed research on HIV self-testing (HIVST) among FSW, our key informant interviews revealed a number of studies underway. This is a strategy that may be particularly appropriate for FSW, given their typically high knowledge about HIV and need for frequent testing.

Based on the findings for FSW, the following recommendations can be made:

▪ Develop and expand programs to combat stigma, which was the primary barrier to HTS identified in this review.

▪ Develop HTS programming in consultation with the FSW who will be served by these programs, as well as with other key stakeholders.

▪ Scale up provision of combination services, including HIV testing and treatment on-site rather than referral to post-test services. Combination services, where a range of health and other services are available, offer increased convenience, reduce time and transportation costs, provide additional impetus to visit the clinic, and reduce stigma associated with HIV service provision.

▪ Scale up community-based and other outreach testing programs, particularly those that accommodate locations and times that are convenient for FSW, such as moonlight outreach programs.

▪ Scale up dedicated sex worker services, which are provided by healthcare workers trained to address the specific needs of FSW. Acknowledging that this may not always be feasible, further research is needed to determine if and how government and other public clinics can become more sex worker friendly.

▪ Conduct further research on HIVST among FSW; in particular, optimal distribution models, innovative ways to facilitate linkage to post-test services, accuracy in other settings outside Zimbabwe, monitoring of adverse events, and impact and cost-effectiveness evaluations of HIV self-testing programs for sex workers.

▪ Conduct further research to identify facilitators and barriers to linkage to post-test services.
Conduct further research to determine strategies to increase linkage to post-test services.

Evaluate the cost-effectiveness of HTS strategies that have proven success.

**ES.5 Men Who Have Sex with Men**

Overall, a moderate number of studies were identified on the barriers, facilitators, and strategies to address HTS for MSM. The majority of these studies were conducted in Kenya and South Africa. There is general consensus on the existence of broad societal homophobia across Sub-Saharan Africa, including in the countries reviewed here. The resulting criminalization, stigmatization, and discrimination create particularly harmful dynamics that deter MSM from accessing HTS, and limit HCW ability to address their specific needs. Criminalization of same-sex relationships among men perpetuates stigma and discrimination; consequently, service providers report concerns of adverse repercussions, as well as a number of personal prejudices, related to the provision of services to MSM.

Facilitators of HIV testing include identifying symptoms, fear after sexual debut, sex with a partner with unknown or HIV-positive serostatus, and couples testing. HCW understanding of the MSM population and delivery of respectful and targeted services encourages MSM to access HTS. Training and use of MSM peer educators, as well as sensitivity training of non-MSM HCW are other approaches that have successfully facilitated HTS. HCW sensitivity training interventions have demonstrated significant improvement in knowledge of MSM sexual health issues and reduced homophobic attitudes. Additionally, MSM engagement with peer educators increased service uptake by MSM.

Available data suggest interest for couples voluntary counseling and testing (CVCT) services among MSM. However, no studies were identified that implemented CVCT interventions specifically for MSM, representing a gap in the evidence base. HIVST may increase access to testing and earlier diagnosis for those who do not or cannot access available services, or who prefer having autonomy and privacy while testing. HIVST may also facilitate voluntary disclosure within couples. A body of research is emerging on HIVST among MSM. Some research suggests routine testing is already common among MSM, but that HIVST might not reach those at highest risk.

Based on the findings for MSM, the following recommendations can be made:

- Decriminalize same sex sexual activity, which will reduce harmful dynamics that deter MSM from testing for HIV and linking to care.

- Develop and evaluate programs to combat stigma, which was the primary barrier to HTS identified in this review.

- Adapt, implement, and evaluate interventions that have been successful in addressing stigma and discrimination, notably in Kenya and South Africa, to other settings where research and programming is absent or extremely limited.
Executive Summary

- Train and support HCW to develop and improve understanding of the sexual health needs of MSM.
- While demand for HIV testing is relatively high among MSM, less is known about linkage to post-test services. Conduct implementation research to explore linkage and ways to facilitate linkage is recommended.
- Conduct further research and programming on how to promote and support CVCT among MSM, for which high interest has been expressed.
- Peer navigation/community-based outreach are promising strategies to engage MSM in HTS. Conduct implementation research in this area, with careful monitoring and impact evaluation.
- Conduct further research on HIVST among MSM; in particular, around whether and how self-testing might facilitate and improve routine testing in MSM, how self-testing might be used to facilitate couples testing, and how it might affect sexual decision-making.

ES.6 People Who Inject Drugs

Only a small number of studies were identified through this review that look at barriers, facilitators, and strategies to address HTS for PWID. This is not surprising, as existing policies in the focal countries prior to 2010 did not create an enabling environment for the development of programs to address the needs of PWID. Three of the focal countries have since adapted policies that legally sanction harm reduction programs to operate with a government mandate.

There is evidence that PWID are interested and motivated to engage with HTS, and that they recognize the importance of being tested. Yet, evidence of low testing, despite high-risk behavior, also exists. Stigma and discrimination were pervasive across studies from different settings. Existing evidence about the dynamics of stigma and discrimination have implications for future programming and service design for PWID. In particular, these findings emphasize the need to leverage local knowledge and to partner with community-based organizations (CBOs) serving PWID in areas where PWID reside or use drugs. It continues to be critical to develop culturally competent models of service provision regarding HTS and to make services more accessible to PWID when they have chosen to engage in clinical care, such as opioid substitution therapy (OST). With regard to HIV testing, using the CBOs and OST as platforms for HCT has shown strong results. Research has already indicated that PWID are agreeable to utilizing outreach-based testing.

For linkage to HIV post-test services, one avenue to pursue includes leveraging the competency from OST providers and expanding it to providers within HIV care and treatment centers. Another initiative may be to examine the feasibility of adopting more community-based approaches of linkage to care, where services are decentralized and provided at the community level. Given the high HIV prevalence among PWID, rapid enrollment into a daily methadone maintenance treatment (MMT) program may have
stabilizing effects, and the MMT clinic provides a unique setting to deliver comprehensive HTS to this key population. Based on this review, HIVST has not been explored as a testing strategy for PWID.

Based on the findings for PWID, the following recommendations can be made:

- Invest in efforts to expand and improve HTS that garner input from PWID themselves (e.g., community advisory boards, drug user advocacy groups, etc.). Foster community empowerment perspectives to design, implement, and evaluate new models of delivery that are responsive to the barriers specific to PWID.

- Pursue innovative approaches, including human-centered design or other community engagement approaches, to develop, implement and evaluate strategies focused on improving engagement by some of the hardest to reach PWID, including communities with the overlapping risks of drug injection and sex work. These could include peer outreach workers for women who inject drugs and/or the utility of respondent driven sampling for recruitment to community-based services.

- Address the intense stigma and marginalization of PWID in HTS, both at the individual and institutional/structural levels. Invest in initiatives that build the cultural competency of medical settings and providers to provide services in a non-stigmatizing/non-discriminating manner.

- Explore the feasibility and acceptability of HIVST for PWID as another community-based approach to HIV testing.

- Accelerate the integration of HIV testing, coupled with linkage services within the OST setting among the established programs.

- Explore the feasibility, effectiveness and efficiency of adopting community-based approaches for linkage to care, where services are decentralized and provided at the community level.

- Develop, implement, and evaluate other community-based models of OST delivery integrated with HIV services (e.g., mobile vans) to improve HTS.

- Conduct mixed-methods research to fully explicate barriers and facilitators for PWID in local socio-spatial contexts and identify areas for new, innovative strategies to engage the hardest to reach PWID.

**ES.7 Adolescent Girls and Young Women**

HIV testing offered during antenatal care was the primary driver of HIV testing among AGYW. HIV knowledge, personal experiences with HIV-infected people, and awareness of their own risk for HIV are also major drivers of HIV testing in this population. However, young people often do not perceive themselves to be at risk, even when living in a generalized epidemic. One of the motivating factors for testing among AGYW is a sense of responsibility to oneself, and planning for the future. Fear of HIV testing itself, of being found to be positive, or of the possibility of experiencing gossip and negative reactions are the primary barriers to testing among young people. Community campaigns to reduce fear
and HIV-related stigma, and training of providers to be nonjudgmental may help to attenuate these fears.

Access for adolescents could be improved by engaging them in areas where they are most comfortable (e.g., schools and social gathering spaces) and increasing the number of testing sites, including community-based testing options. Community-based programs, particularly mobile testing and home-based testing, were highly acceptable to young people. No matter where services are accessed, it seems clear that youth-friendly services delivered by staff trained to meet the needs of youth may be beneficial for increasing testing. Though the evidence is limited, mobile technology and other media may be a useful way to increase HIV testing.

No published literature was identified that addressed improving linkage to care for adolescents. Overall, for both testing and linkage, research concerning interventions specifically addressing female adolescents has not been prioritized and there are major gaps in the existing research.

Ongoing research and programming is largely incorporating the evidence base, with a number of combination programs underway that attempt to address barriers identified in this review. In terms of novel testing strategies, evidence suggests that self-testing is highly acceptable among adolescents and young people. This may be because HIVST is inherently able to address a number of identified barriers, including confidentiality, logistical constraints, stigma, and negative reactions by healthcare providers.

Based on the findings for AGYW, the following recommendations can be made:

- Routinely disaggregate data by age and gender, in order to evaluate and interpret the impact of HTS research and programming on AGYW.
- Because it is one of the primary drivers of HIV testing among AGYW, facilitate and ensure that this population has access to antenatal care and postpartum care services.
- Utilize strategies that address structural barriers and facilitators to HTS among AGYW, including addressing policies that limit access to these services, reducing stigma in communities and by providers, creating youth-friendly services, and cultivating a sense hope and optimism about the future, among other structural factors.
- Utilize strategies that increase knowledge in AGYW that promote and increase demand for HTS, including knowledge of HIV risk, information on location of testing facilities, and where to go for post-test care, among other topics.
- Utilize community-based testing strategies that are provided at times and locations convenient for AGYW to attend.
- Conduct research and programming on how best to facilitate AGYW’s linkage to appropriate post-test services, as virtually no evidence has been generated to guide best practices for linkage among AGYW.
- Conduct research on incorporating mobile technology and social media for demand creation and to facilitate testing and linkage—although the evidence-base is limited, young people are avid users of mobile technology and social media, and evidence to date suggests these avenues hold promise for this population.

- Conduct research on HIVST as a potentially promising strategy to increase uptake of HIV testing among AGYW.

**ES.8 Men**

We identified men’s underutilization of healthcare as one of the primary barriers to HIV testing. Health services were commonly cited as being thought of as female spaces, and consequently not accommodating to men. Provider factors were another barrier identified, where clinics are not considered to be “male-friendly,” men reported that HTS did not have sufficient privacy, and HCW were judgmental and did not respect clients’ confidentiality. Additional structural barriers to testing were also identified, including gender norms and notions of masculinity, fatalism or perceived inevitability of infection, stigma around HTS, and denial and preference not to know one’s status. With outreach strategies, one barrier was that men are often not present in locations where HIV testing takes place.

There are limited data on the facilitators to male testing, which presents a challenge to identifying potential solutions. Some facilitators that have been identified include creating male-only or male-friendly clinic services, and providing services at alternate locations and/or hours to accommodate men, such as community-based or workplace testing and evening and weekend services. Additionally, men have expressed an interest in attending other healthcare services in the community that are not HIV-specific, and high attendance by men can be achieved through other health promotion activities. Integrating HTS into this model has shown some success. HIVST also represents a promising strategy to increase testing uptake among men.

Based on the findings for men, the following recommendations can be made:

- Disaggregation of study findings by gender was uncommon. Routine disaggregation of data by gender is recommended in order to understand the impact of interventions on men.

- Conduct further research to understand the relative importance of barriers (and facilitators) to testing among men, which would permit tailored intervention strategies that may have greater impact. Similarly, improved understanding of male motivations around health could be leveraged to encourage men’s engagement in HTS.

- Explore implementation of male-friendly and male-only clinics to increase male engagement in HTS. Clinics should be tailored to men in terms of location and hours of operation.

- Train providers to reduce bias and to be more male-friendly, including respecting the confidentiality of men, reducing stigma, addressing their specific health needs, and
ensuring that HTS strategies such as provider-initiated testing and counseling (PITC) are routinely offered to men.

- Given the findings around men’s absence in healthcare settings, we recommend workplace and community-based testing strategies. These strategies should be tailored to the locations and times at which men are most likely to be present.

- Conduct further research around whether strategies that improve engagement of men in HTS are reaching high-risk men who do not otherwise engage in currently available services.

- Although data were limited, self-testing represents a promising new strategy to increase uptake of testing in at-risk men. Consequently, further research is warranted, particularly to explore distribution strategies, to evaluate linkage to post-test services among men testing positive, and to identify what support is required to promote successful linkage after self-testing.

- Conduct further research on strategies to increase linkage to post-test services and on programming that carefully monitors and evaluates linkage among men.

ES.9 Conclusions and Recommendations

This landscape review provides an important overview of policy, published research, and ongoing research and programming among the target populations in the six focal countries. However, several limitations to this research are important to note, including the limited temporal and geographic scope of this research, and the lack of specificity for many of the interventions identified. Also, because of the sampling strategies used in the large majority of studies, limitations exist with regard to the generalizability of the data, and the potential biases that may exist therein.

Bearing that in mind, we have identified a series of themes that are common across several or all of the target populations. Consequently, we present a set of overarching recommendations for research and programming that we believe are required to facilitate further understanding of the issues and to improve engagement in HTS among the target populations:

- Research, programming, and activism are needed to address policies that criminalize key populations and people living with HIV.

- Adopt routine measurement of stigma in research and programming, and implement and evaluate evidence-based models and practical tools to address and reduce stigma.

- Implement and scale-up strategies that bring HTS to the hard-to-reach populations targeted in this review by utilizing home-based, community-based, mobile, and other outreach testing strategies.

- Implement dedicated services based on country epidemiology and government priorities. Conduct further research to explore the effectiveness of transfer of population-friendly skills from dedicated services to government or other public-sector services.
▪ Implement and scale-up combination service provision.
▪ Conduct HIVST implementation research.
▪ Conduct rigorous size estimation studies for key populations to improve understanding of the HTS environment, what resources are required to address engagement in HTS in these populations, and the impact of current programming.
▪ Within HTS research and programming, implement strategies to disentangle the proportion of HTS services delivered to new testers and to those who have not tested recently.
▪ Explore innovative and effective strategies to improve measurement of linkage to post-test services.
▪ Adopt routine inclusion of a cost-effectiveness component in research and programming to engage hard-to-reach populations in HTS in order to make informed decisions on implementation and scale-up of promising strategies. Also, funding agencies include support for cost-effectiveness analyses as part of routine intervention evaluation.

**ES.10 Next Steps**

While greater control of the HIV epidemic has been seen overall, there remain subpopulations at high risk for HIV transmission, including the five target populations in this review, whose access to and engagement in HTS and other HIV services is often suboptimal. To meet the ambitious UNAIDS 90-90-90 target—which is fundamental to ending the HIV epidemic—this inequity must be addressed. Engagement in HTS is the critical first step and the biggest gap in the 90-90-90 target for HIV elimination. This landscape review offers insight into policy, barriers, facilitators, and ongoing programming around HTS among the target populations and in the focal countries of interest. The resulting recommendations serve as a path forward to address this critical gap.⁵
1. INTRODUCTION

Tremendous progress has been made in the AIDS response in the past 15 years. The number of new infections has been reduced from 3.1 million to 2 million, a 38% decrease, and over 15 million people are now receiving life-saving antiretroviral therapy (ART). AIDS-related deaths have fallen by 35% since 2005. However, despite these tremendous strides, an estimated 2 million people were newly infected with HIV and 36.9 million people were living with HIV in 2014.

Effective tools now exist for the prevention and treatment of HIV, such as voluntary medical male circumcision (VMMC) and treatment for prevention strategies. The advent of these strategies has allowed the global AIDS community for the first time to envision the possibility of HIV elimination. To that end, UNAIDS has established the ambitious “90-90-90” target to end the AIDS epidemic, where by 2020 90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV infection will receive sustained ART, and 90% of all people receiving ART will have viral suppression.

The critical first step in accessing prevention, care, and treatment services is HIV testing, which represents the biggest gap in the 90-90-90 target for HIV elimination. Globally, it is estimated that only 48% of people living with HIV are aware of their serostatus. Delay in diagnosis is an important contributor to high rates of early mortality among HIV care programs in sub-Saharan Africa. Demographic and Health Surveys (DHS) from countries in sub-Saharan Africa show marked variations in uptake of HIV testing, with key subgroups such as males and young people, and key populations such as sex workers and men who have sex with men (MSM) being least likely to have tested. Importantly, low uptake of HIV testing services (HTS) also limits effective implementation of HIV treatment and prevention strategies. Commonly cited barriers to testing include concerns about stigma, an unwelcoming clinic environment, fear of prognosis, and low risk perception, as well as the inconvenience, transportation, and other opportunity costs incurred. Additional structural, social, and behavioral barriers exist that are unique to individual populations, settings, and context.

Ensuring universal access to HIV prevention, treatment, and care in countries with generalized epidemics, such as in Eastern and Southern Africa, requires near complete uptake of annual HIV testing by all adults, with more frequent testing recommended for high-risk populations. Despite wide availability of HTS, a substantial testing gap persists. To meet the established targets for HIV elimination, we must begin to look at which strategies can be utilized to support the first of the 90-90-90 target. To do this, it will be necessary to first ensure there is a nuanced knowledge of setting and population as it pertains to the epidemic, and a policy framework grounded in the principles of human rights and universal access. It will also be necessary to ensure effective implementation, access, and uptake of evidence-based HTS strategies. Finally, it will require exploring
innovative strategies and expanding on successful approaches to overcoming barriers to testing and linkage to post-test services.

### 1.1 Objectives

As a preliminary step toward addressing the testing gap, this report presents a “landscape” review of HIV testing and linkage to post-test services. It focuses on multiple key populations, including female sex workers (FSW), MSM, people who inject drugs (PWID) and adolescent girls and young women (AGYW), as well as interventions specifically targeting men and reviews HTS among these populations in six focal countries: Kenya, Malawi, South Africa, Tanzania, Zambia, and Zimbabwe.

The specific objectives of this review are as follows:

1. To summarize the policies in the six focal countries that are directly and indirectly related to HTS for the target populations.
2. To identify (a) the primary barriers and facilitators, and (b) the strategies used to improve HTS in the target populations as identified in the literature.
3. To determine the relative importance of barriers and facilitators to HTS for the target populations identified through the review.
4. To determine whether the data support generalizability across countries in the identified barriers and facilitators.
5. If the challenges to increasing uptake of HTS are fairly well defined, to identify what programs, interventions, and delivery models have been found to have the greatest impact.
6. To summarize ongoing programs and research among the target populations, to evaluate the need for rollout and/or scale-up of these programs and policies, and to determine whether the data suggest that particular programs or policies should not be rolled out and/or scaled up.
7. To make recommendations based on this review about the prioritized primary research gaps to informing global and national policy and programming among the target populations in the focal countries.

### 1.2 Focal Countries

Descriptive HIV statistics from each of the focal countries are presented in Table 1-1. Based on these statistics, some generalizations can be made about these countries. For example, they are all experiencing generalized epidemics, and the primary mode of transmission is heterosexual sex. In all of these countries, HIV prevalence among women is nearly 40% higher than men. However, this aggregate data belies dramatic variation across and within these six countries. A clear understanding of this variation and the complex dynamics of HIV transmission among different populations within each country is important to determining the optimal approaches to increasing knowledge of HIV status and linkage to post-test services. This review explores these dynamics among the target populations noted above, as they relate to HTS.
Table 1-1. Population Size and HIV Statistics among the Six Focal Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
<th>Adult (Aged 15–49) HIV Prevalence</th>
<th>Adults Living with HIV</th>
<th>Deaths Caused By AIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malawi</td>
<td>16.36 m</td>
<td>10.0% [9.3%-10.8%]</td>
<td>1,100,000 [990,000–1,100,000]</td>
<td>33,000 [27,000–41,000]</td>
</tr>
<tr>
<td>Kenya</td>
<td>44.35 m</td>
<td>5.3% [4.7%-6.1%]</td>
<td>1,200,000 [1,100,000–1,400,000]</td>
<td>33,000 [25,000–45,000]</td>
</tr>
<tr>
<td>Tanzania</td>
<td>49.25 m</td>
<td>5.3% [4.8%-5.9%]</td>
<td>1,400,000 [1,200,000–1,800,000]</td>
<td>46,000 [36,000–80,000]</td>
</tr>
<tr>
<td>South Africa</td>
<td>52.98 m</td>
<td>18.9% [17.9%-19.9%]</td>
<td>6,500,000 [6,100,000–7,100,000]</td>
<td>140,000 [100,000–190,000]</td>
</tr>
<tr>
<td>Zambia</td>
<td>14.54 m</td>
<td>12.4% [11.7%-13.1%]</td>
<td>1,200,000 [1,100,000–1,200,000]</td>
<td>19,000 [15,000–24,000]</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>14.15 m</td>
<td>16.7% [15.9%-17.5%]</td>
<td>1,400,000 [1,300,000–1,500,000]</td>
<td>39,000 [32,000–49,000]</td>
</tr>
</tbody>
</table>

1.3 Target Populations

1.3.1 Sex Workers

Since the emergence of HIV as a serious public health threat in Sub-Saharan Africa, the particular vulnerability of sex workers has been documented extensively. Stigma and discrimination, violence, and criminalization of sex work are important factors contributing to the increased vulnerability of this key population. HIV prevalence as high as 60% to 90% has been reported for sex workers in Kenya,18 South Africa,19 and Zimbabwe.20 Data suggest that sex workers in Africa typically have HIV prevalence 10 to 20 times higher than the general population21 as well as high prevalence of other sexually transmitted infections (STIs) that further increase risk of contracting and transmitting HIV.22

Despite long-standing acknowledgement of their enhanced risk, FSW continue to be largely neglected by HIV programs in Africa.21 Delivering services is complicated by the fact that sex work is illegal in countries throughout the region.23,24 This punitive environment has been shown to limit availability, access to, and uptake of HIV testing and linkage to post-test prevention and care services.1 The situation is compounded by inadequate population estimates or HIV prevalence data for key populations, including FSW, which in turn compromises HIV programming.

Historically data on FSW rates of HIV testing are scant, and often suboptimal when reported.25,26 Documented barriers to testing among FSW include those faced by others in resource-poor settings, including lack of awareness of services, distance to facilities, transportation costs, opportunity costs, time constraints, and fear of a positive test result.27-29 Barriers unique to FSW include stigma, anxiety about contact with authorities, and
concern about confidentiality—particularly that other FSW or potential clients may learn their status.\textsuperscript{30} Stigma, marginalization, and abuse of human rights have been highlighted as key determinants of reduced access to healthcare among FSW in southern Africa.\textsuperscript{31} Promoting the engagement of FSW in HIV testing and timely linkage to prevention and care is likely to reduce sexual transmission of HIV in the FSW population, as well as their partners and clients. In Sub-Saharan Africa, 10\% to 33\% of new HIV infections overall have been attributed to sex work.\textsuperscript{32} Observational studies and mathematical models support the use of targeted HIV prevention for most-at-risk populations, as this is likely to be sustainable and cost-effective.\textsuperscript{33-35} The rationale for prioritizing FSW for interventions that optimize engagement in HIV testing, prevention and care services is compelling for its own sake, as well as for wider public health gain.

\textbf{1.3.2 Men Who Have Sex with Men}

MSM are a community that have faced, and continue to face, substantial risk for HIV infection in essentially every context where they have been studied.\textsuperscript{36-38} Despite nearly 35 years of research and clinical, community organizing and public health efforts, high levels of HIV prevalence and incidence continue to be seen among MSM throughout the world.\textsuperscript{36} In many high-income settings, the overall trajectory of the HIV epidemic is declining, except among MSM; and in some settings it has actually been increasing as re-emergent epidemics.\textsuperscript{39,40} Although data are scant, in much of Africa, the largest burden of HIV infection in any risk group is among MSM.\textsuperscript{36} The ongoing criminalization of same-sex behavior results in hidden and stigmatized MSM populations in much of the world. This exacerbates the gaps in understanding uptake and needs of MSM in terms of HTS, which poses challenges to HIV research, surveillance, and the epidemiological characterization of MSM and decreases access to and uptake of HTS.\textsuperscript{36} These structural realities continue to limit understanding of HIV programming for MSM, while also serving as drivers of the vulnerability of MSM to HIV infection and barriers to engagement in HIV services.\textsuperscript{40,41} In a recent global survey, approximately 35\% of MSM reported access to HIV testing, and 40\% of MSM living with HIV reported access to HIV treatment.\textsuperscript{42}

\textbf{1.3.3 People Who Inject Drugs}

The extent of HIV/AIDS risk linked to injection drug use is alarming, as evidenced by the high HIV prevalence among PWID worldwide.\textsuperscript{43} Several factors contribute to this high prevalence, including the sharing of contaminated needles, drug intoxication that affects decision-making and increases the likelihood that PWID engage in high-risk sex behavior, exchanging sex for drugs or as a means to finance drug use, and the psychological consequences of drug addiction that impair the ability of PWID to effectively manage their health conditions.\textsuperscript{44,45} Although injection drug use is responsible for an increasing proportion
of new HIV infections in many parts of the world, understanding the epidemiology of injection drug use is complicated because injection drug use is both illegal and stigmatized as a behavior. Population-based surveys systematically underestimate the prevalence of PWID because of selection bias and other uncertain sampling methods. Consequently, particularly in Sub-Saharan Africa, there are no reliable epidemiological data.

Specific interventions can help mitigate risk and facilitate the treatment of HIV infection among PWID. By increasing access to uncontaminated needles and injecting equipment, needle and syringe exchange programs can reduce the incidence of HIV infection. If organized at a community-level, such programs can facilitate the establishment of relationships with PWID, who are a hidden population in many contexts. Opioid substitution therapy (OST) can also help to mitigate injection-related and sex-related risks for HIV, and can serve as a launching point for further healthcare services.

PWID consistently face barriers that limit the availability and accessibility of HIV prevention and treatment interventions, including the uptake of HTS. Where programs exist, many fail to reach those who could benefit most because of requirements that make it difficult for patients to enter and remain in services. Structural barriers—such as punitive laws, uncoordinated services, programs with burdensome requirements, lack of transportation, high costs, or fear of stigmatization—impact utilization of HTS by PWID. Additionally, physicians sometimes delay or withhold treatment for fear of ongoing drug use, risky behaviors, and nonadherence potentially leading to drug resistance. Consequently, only 4 per 100 HIV-positive PWID worldwide receive ART.

1.3.4 Adolescent Girls and Young Women

By the end of 2012, an estimated 2.1 million adolescents (aged 10 to 19) were living with HIV, with HIV prevalence among young women more than twice that of young men throughout Sub-Saharan Africa. AGYW aged 15 to 24 account for 71% of new HIV infections among young people in Sub-Saharan Africa. Over 85% of all adolescents living with HIV are in Sub-Saharan Africa, where AGYW account for over 70% of young people living with HIV globally.

Though effective interventions exist to prevent new HIV infections and also to treat people living with HIV to ensure that they survive and thrive, because of their age adolescents face specific barriers in accessing HIV-related interventions and services, including uptake of HTS. Gender-based violence, community and service provider attitudes about adolescent sexual activity, and systems and policies that do not address the needs of young people are commonly cited factors associated with low uptake of HTS. Additionally, many countries have age of consent laws that prevent a majority of adolescents, even those who are sexually active, from independently seeking HIV testing and counseling, a key gateway to multiple effective interventions for prevention, treatment, care, and support. Consequently, late diagnosis and poor outcomes among adolescents living with HIV are common.
1.3.5 Men

Across Sub-Saharan Africa, fewer men access HIV testing than women. Consequently, HIV-infected men have delayed access to ART and increased morbidity and mortality. Women are traditionally more engaged in health services, and they are more often tested through antenatal care and/or provider-initiated testing and counseling (PITC, also known as “opt-out” testing) services. Men face multiple barriers to HTS, including stigma, transportation and opportunity costs, fear, and a common perception that health facilities are “female spaces.”

A number of approaches have been implemented to reach men for HTS. Partner testing in antenatal care, PITC in other clinical settings, community-based models such as home-based and mobile HTS, and on-site workplace testing are among the strategies used to target men. Additionally, the availability of VMMC services also promotes HIV testing in men. Although these approaches have shown some success in reaching men, in many settings the uptake of HTS remains low. In particular, uptake of testing among high-risk men is critical, such as clients of sex workers, or men in serodiscordant relationships. The low uptake of HTS among men compromises the impact of evidence-based HIV prevention and care strategies. In high HIV prevalence settings, a greater emphasis must be placed on engaging men in HIV testing and linkage to the full range of prevention and care options available to them.

1.4 In Sum

To substantially reduce the scale and impact of the AIDS epidemic, let alone to achieve an AIDS-free generation, national AIDS responses must strengthen the quality and impact of programming for HIV prevention, treatment, and care for each of these target populations. The gateway to these services is HIV testing. Targeted research, innovative strategies, and program responses for HTS must be more strategic and effective, and address the underlying factors serving as barriers to testing and linkage in these populations.
2. METHODS

To meet the objectives of this review, we conducted three distinct data collection activities. To address Objective 1, we conducted an extensive review of the legal and policy framework related to our target populations and their access to HIV services. To address Objectives 2 through 5, we conducted a systematic review of the peer-reviewed literature. We then reviewed a series of gray literature sources to capture relevant research and programming that may not have been published in a peer-reviewed format. Finally, to address Objective 6, we conducted interviews with key informants to learn more about research and programming that may be planned, is currently underway, or that has not been reported through the available published or gray literature. Each data collection method was reviewed for how they pertain to the target populations of FSW, MSM, PWID, AGYW, and interventions specifically targeting men. The review comprises the six focal countries of Kenya, Malawi, South Africa, Tanzania, Zambia, and Zimbabwe. Based on the data collected, we have summarized the findings and made recommendations for the way forward in HTS research and programming in these populations (Objective 7).

2.1 Policy Review

To better understand the ways in which the legal and policy framework facilitates or inhibits people’s ability to access HIV-related prevention services, we reviewed the following categories of documents:

- **Country Specific Policy Documents**
  - National statutes, including health laws, children’s laws, employment laws, personal laws and criminal laws
  - National policies and plans relating to HIV and related areas of law and human rights
  - Constitutions
  - National gender policies

- **Reports**
  - Reports to United Nations (UN) agencies
  - UNAIDS reports and documents dating back to January 2010
  - Organizational health and human rights research reports and other related documents
  - World Health Organization (WHO) documents and reports dating back to January 2010
  - Open Society Foundations reports dating back to January 2010
  - Amnesty International policy statements dating back to January 2010
  - Human Rights Watch country-specific documents dating back to January 2010
African Men for Sexual Health and Rights (AMSHeR) reports dating back to January 2010
- Harm Reduction International documents and reports dating back to January 2010
- AIDS & Rights Alliance for Southern Africa (ARASA) documents and reports dating back to January 2010

▪ Additional Same-sex Laws and Issues Documents
  - 76crimes.com: Articles that focus on anti-same sex-laws and issues
  - Equaldex.com: Country highlights

We retrieved documents from the source websites, reviewed them for relevance, and extracted and summarized pertinent data related to the target populations.

2.2 Literature Review

2.2.1 Peer-Reviewed Literature

We conducted a separate literature review for each of the five target populations. For the populations of FSW, MSM, and PWID, we systematically reviewed the published literature from both the PubMed and Popline databases. These databases were selected because they yielded a high proportion of relevant and nonduplicative results out of 10 databases searched in a previous systematic review of a similar topic conducted by the authors of this report. For AGYW, because of the volume of articles retrieved, we searched only the PubMed database.

For the target population of men, a modified search method was used, conducting a systematic review of systematic reviews using only the PubMed database. A systematic review of reviews has become an increasingly common method, which has been proposed by the UK’s Health Development Agency\(^58\) and used in numerous previous peer-reviewed articles.\(^59\)\(^61\) Based on the sheer volume of literature pertaining to HIV testing among men, and because of the large number of recent, high-quality review articles available, this was an appropriate search strategy for this population. The search strategies used for each population are provided in Appendix A.

Each literature review was conducted to search for articles that add to our knowledge of barriers and facilitators to HTS, and of interventions to promote HTS based on a set of seven predefined criteria for inclusion (Table 2-1). However, particularly for populations where little research has been conducted, we also retained additional articles if they enhanced our understanding of the stated objectives.
### Table 2-1. Inclusion and Exclusion Criteria for Interventions to Promote HIV Testing and/or Linkage to Care

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Included</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time period</strong></td>
<td>Results published or released between January 2010–February 2016</td>
<td>Pre 2010 or post February 2016</td>
</tr>
<tr>
<td><strong>Geographical area of implementation on intervention</strong></td>
<td>Kenya, Malawi, South Africa, Tanzania, Zambia, Zimbabwe</td>
<td>All other areas</td>
</tr>
<tr>
<td><strong>Target population of intervention</strong></td>
<td>MSM, SW, PWID, adolescent girls/young women, or does the intervention target men</td>
<td>Studies where the main focus of the intervention is not one or more of these populations, or where the results are not stratified by one of these populations</td>
</tr>
<tr>
<td><strong>Main focus of research</strong></td>
<td>1. Evaluated facilitators or barriers to HIV testing and/or linkage to care</td>
<td>1. Research that does not specifically evaluate or otherwise address facilitators and/or barriers to HIV testing and/or linkage to post-test HIV services</td>
</tr>
<tr>
<td></td>
<td>2. Evaluated an intervention to impact HIV testing and/or linkage to care</td>
<td>2. Research that does not describe an intervention intended to impact HIV testing uptake and/or linkage to post-test HIV services</td>
</tr>
<tr>
<td><strong>Evaluation design</strong></td>
<td>1. Reviews, experimental, quasi-experimental, observational, qualitative, or other designs; evaluated in at least 10 individuals</td>
<td>1. Interventions evaluated in fewer than 10 individuals</td>
</tr>
<tr>
<td></td>
<td>2. Reviews, experimental, quasi-experimental, or observational designs; other study designs may be considered on a case-by-case basis; evaluated in at least 40 individuals</td>
<td>2. Research that has only a qualitative component; interventions evaluated in fewer than 40 individuals</td>
</tr>
<tr>
<td><strong>Evaluation outcomes</strong></td>
<td>1. Exploration of or impact on facilitators and/or barriers to HIV testing and/or linkage to post-test services</td>
<td>1. Research where facilitators and/or barriers are not specifically addressed, or data on these outcomes is not disaggregated</td>
</tr>
<tr>
<td></td>
<td>2. Impact on uptake of HIV testing and/or linkage to post-test services</td>
<td>2. Research where uptake of HIV services and/or linkage to post-test services are not the primary outcome, or where data on these outcomes is not disaggregated</td>
</tr>
<tr>
<td><strong>Quality of article/report and the evaluation</strong></td>
<td>Research reporting sufficient detail on (a) the exploration, evaluation, or intervention; (b) the design and methods used; and (c) appropriate analysis of the results</td>
<td>Research where insufficient information on design, methods and/or results is available or where the data were not analyzed appropriately</td>
</tr>
</tbody>
</table>

Note: 1=Criterion refers to facilitators or barriers to HIV testing/linkage to care; 2=Criterion refers to an intervention to impact HIV testing/linkage to care; MSM=men who have sex with men; SW=sex workers; PWID=people who inject drugs *Articles that did not meet these criteria were retained if they enhanced our understanding of the stated objectives for populations who had small amounts of literature conducted.
We searched for articles published between 1 January 2010 and 29 February 2016. All references were initially screened for inclusion based on title and abstract by one reviewer. Potentially relevant citations underwent full text review by one reviewer based on our predefined criteria for inclusion (Table 2-1). Any citation whose suitability for inclusion was unclear was reviewed by a second author. A third reviewer was available in the event of a discrepant decision by the first two reviewers. Reasons for exclusion were noted, and can be found in Appendix B. Note that some citations were excluded based on multiple criteria; however, only the first reason for exclusion was recorded.

### 2.2.2 Gray Literature

In addition to the published literature, we conducted a gray literature search to capture important research and programming that may not be published in a peer-reviewed format. We selected a set of gray literature sources that were likely to solicit complimentary information relevant to the stated objectives of the review. These gray literature sources included:

- **UN Sources**
  - UNAIDS
  - WHO
  - UNFPA
  - UNICEF

- **Conference Abstracts**
  - International AIDS Society conference (IAS)
  - International AIDS conference (IAC)
  - Conference on Retroviruses and Opportunistic Infections (CROI)
  - International Conference on AIDS and STIs in Africa (ICASA)
  - HIV Research for Prevention (HIVR4P)
  - African Conference on Key Populations in the HIV Epidemic
  - International Harm Reduction Conference

- **Other Relevant Websites**
  - Population Council (http://www.popcouncil.org/)
  - Jhpiego (https://www.jhpiego.org/)
  - Global Network of Sex Work Projects (http://www.nswp.org/)
  - 76 Crimes (https://76crimes.com/)
  - Global State of Harm Reduction report(s) (http://www.ihra.net/global-state-of-harm-reduction)
We searched each of the above sources for relevant information on each target population. For conference abstracts, we limited the review period to January 2014 to the present. This time frame was selected to capture recent work that may not yet have been published in a peer-reviewed format.

### 2.3 Key Informant Interviews

To collect information on ongoing programs and research among the target populations (Objective 6), we conducted key informant interviews with researchers and program experts from global, governmental, nongovernmental organizations, and research organizations. We initially compiled a list of key informants and reviewed it to determine if we had captured people with expertise in each of the six countries, and among each of the five target populations. We shared this list with colleagues at the Bill and Melinda Gates Foundation for review, who added additional individuals to this list.

We developed a key informant interview guide to document the type of information we wanted to collect (see Appendix C). Key informants were contacted by email, telephone or in person to gather information on ongoing programs and research, or on other individuals who might be important key informants. Additional key informants were added to the list and contacted throughout this process. A list of all key informants who were contacted is provided in Appendix D.

Information and data from key informants were collated by target population, and are summarized within the relevant target population chapters.
3. POLICY REVIEW

3.1 HIV

The HIV policies and strategies for each of the six focus countries are described in detail below. All of the countries, with the exception of South Africa, criminalize transmission and exposure of HIV. Even in South Africa, however, other laws have been used to criminalize transmission. Kenya, South Africa, and Zimbabwe have employment antidiscrimination laws. Mandatory HIV testing is conducted in Malawi, Zambia, and Zimbabwe. Depending on the country, mandated testing is in place for sex offenders, sex workers, organ and tissue donors, if a person is unconscious and unable to consent to a test, and if a medical provider thinks it is clinically necessary or in the best interest of the person. In some situations, HIV testing is a requisite for employment. All of the countries have minimum age of consent laws for HIV testing, ranging from 12 to 18 years old (Table 3-1).

### Table 3-1. Age of Consent for HIV Testing, by Country

<table>
<thead>
<tr>
<th>Country</th>
<th>Age</th>
<th>Exceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>15</td>
<td>If symptomatic; pregnant; married; considered high risk</td>
</tr>
<tr>
<td>Malawi</td>
<td>13</td>
<td>n/a</td>
</tr>
<tr>
<td>South Africa</td>
<td>12</td>
<td>If mature enough and has mental capacity to consent</td>
</tr>
<tr>
<td>Tanzania</td>
<td>18</td>
<td>Married; pregnant; sexually active; think may have HIV</td>
</tr>
<tr>
<td>Zambia</td>
<td>16</td>
<td>n/a</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>16</td>
<td>Sufficient maturity; symptomatic; sexually active; survivor of sexual abuse; report exposure to HIV; worried about mother-child transmission; concerned that if test positive parents will prevent access to care</td>
</tr>
</tbody>
</table>

All of the countries’ HIV strategies address vulnerable populations and settings; however, only Kenya and Tanzania address PWID. Table 3-2 indicates whether or not country HIV strategies address specific populations.
Table 3-2. Populations Addressed by Each Country’s HIV Strategy

<table>
<thead>
<tr>
<th>Country</th>
<th>Men Who Have Sex with Men</th>
<th>People Who Inject Drugs</th>
<th>Sex Workers</th>
<th>Women and Girls</th>
<th>Adolescents</th>
<th>Prisoners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Malawi</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>South Africa</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Zambia</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.1.1 Kenya

The HIV and AIDS Prevention and Control Act enacted in 2006 promotes various nondiscrimination efforts for people living with HIV, such as employment, housing, and education. Nondiscrimination for employees living with HIV is also guaranteed through the Employment Act of 2012. That Act stipulates that HIV or AIDS does not constitute a reason for dismissal, and protects people from pre-employment HIV testing.

The HIV and AIDS Prevention and Control Act also prohibits mandatory HIV testing and stipulates that testing should always be done voluntarily, confidentiality, and with informed consent. Although the Act contains protective provisions for people living with HIV, key populations such as MSM, sex workers, and PWID are not protected from discrimination. The Act indicates that HIV testing without consent may be performed when ordered by a court or in situations where a person is charged with an offense of a sexual nature under the Sexual Offences Act, 2006.

Starting at the age of 15, someone can legally consent to HIV testing. In certain situations—such as if an individual is symptomatic, pregnant, married, or considered at risk—the age requirement can be waived. The HIV Testing Guidelines (2015) stipulate that HIV testing can occur outside facilities or in community-based settings, and can be conducted by lay providers. Compulsory HIV testing can be court ordered.

Exposure or transmission of HIV is criminalized in Kenya through two different Acts. The HIV and AIDS Prevention and Control Act 2006 criminalizes the intentional transmission of HIV. The Sexual Offences Act 2006 criminalizes the deliberate transmission of HIV. A defense of consent is allowed.
3.1.2 Malawi

Despite the 2008 Report of the Law Commission on the Development of HIV and AIDS Legislation recommendation that Malawi enact an HIV-specific law protecting the rights of people living with HIV or AIDS,66 no such law currently exists. Although the Employment Act of 2000 and the Occupational Safety, Health and Welfare Act of 1997 contains broad protections for employee’s rights, it does not specifically address HIV and AIDS. No laws exist for the rights of employees with HIV. The HIV and AIDS (Prevention and Management) Bill of 2013 prohibits mandatory HIV testing, but allows testing for specific groups of people, including sex workers.

Age of consent for HIV testing is 13 years.67 The HIV Testing Guidelines (2013) stipulate that HIV testing can occur outside facilities or in community-based settings, and can be conducted by lay providers. The Guidelines stipulate that organ and tissue donors are required to have an HIV test, and HIV tests may be mandated by a court of law.

The transmission of HIV in Malawi is criminalized by the Penal Code. Similarly, the Penal Code allows for the quarantine, as well as prohibition from employment, of people who have HIV. In 2012, the Malawi Network of People Living with HIV and AIDS, in collaboration with other civil society organizations and the United Nations Development Program, recommended that the HIV and AIDS Prevention and Management Bill exclude HIV criminalization provisions.68 The current draft of that plan does not include HIV criminalization provisions.66

3.1.3 South Africa

South Africa’s Promotion of Equality and Prevention of Unfair Discrimination Act of 2000 protects and promotes equality. Although the law does not specifically mention HIV, the courts have used these provisions to extend protections to people living with HIV.69 Employees are protected from discrimination by the Labour Relations Act of 1998, and the Employment Equity Act of 1998 prohibits discrimination in any employment policy or practice for various reasons, including HIV status. This Act also prohibits mandatory HIV testing, including pre-employment testing, in the workplace.

The age of consent for HIV testing is 12 years.70 If an individual under the age of 12 has sufficient maturity and mental capacity to understand the benefits, risks, and social and other implications of HIV testing, that person may give consent. The HIV Testing Guidelines stipulate that HIV testing can occur outside facilities or in community-based settings, and may be conducted by a lay provider. The Guidelines do not support mandatory testing.

South Africa does not have specific laws that criminalize exposure or transmission of HIV. Nonetheless, application of criminal law resulted in the 2013 conviction of HIV exposure where the accused was convicted of attempted murder.68
3.1.4 Tanzania

The HIV and AIDS Prevention and Control Act of 2008 protects people from HIV-related human rights violations and employment discrimination in Tanzania. Protections for employees are also guaranteed through the Employment and Labour Relations Act, 2004. Although these laws guarantee people living with HIV the ability to not be discriminated against at work, it does not fully protect their right to remain employed. Employers have the right to terminate employment, provided the employee is given terminal benefits.69

In Tanzania, the age of consent for HIV testing is 18 years.71 Any person below the age of 18 who is married, pregnant, sexually active, or believed to be at risk for infection may also give consent to be tested. In Zanzibar, the HIV and AIDS Prevention and Management Bill of 2013 allows young people aged 16 and above to access HIV testing without parental consent. Tanzania’s HIV Testing Guidelines stipulate that HIV testing can occur outside facilities or in community-based settings. Tanzania does not, however, have a provision for lay providers to administer HIV testing, although new guidelines currently in development include a provision for lay provider testing. Although Tanzania’s National Health Policy of 2001 protects the right to HIV testing only with voluntary and informed consent, Tanzania’s HIV Testing and Counseling (HTC) guidelines provide that mandatory testing is permitted by court order; for organ and tissue donors; to sex offenders; if a person is unconscious and unable to give consent; and if the medical provider reasonably believes it is clinically necessary or in the best interest of the person.

Although the HIV and AIDS Prevention and Control Act of 2008 protects against HIV-related discrimination, it criminalizes the willful transmission of HIV. A defense of consent is allowed.65

3.1.5 Zambia

Zambia does not have a comprehensive HIV-specific law.69 The Industrial and Labour Relations Act of 2011 prohibits discrimination within the working environment and also denying someone employment on the grounds of social status. This nondiscrimination clause does not specifically mention HIV; however, Constitutional rights seem to apply equally regardless of HIV status. For example, in 2010 two employees brought a case to court challenging required HIV testing for employment and also for unfair dismissal. The High Court Judge ruled in their favor stating that mandatory HIV testing is unconstitutional.72 However, the Employment Act requires that every employee entering into a contract of at least 6 months be examined by a medical officer to ascertain ability to undertake work. This Act does not specifically mention HIV status, but is used by some employers to justify HIV testing.69

Age of consent for HIV testing is 16 years.73 The HIV Testing Guidelines of 2006 stipulate that HIV testing can occur outside facilities or in community-based settings, and may be
conducted by a lay provider. These guidelines also stipulate that mandatory HIV testing is to be performed on tissue and organ donors and also to fulfill visa requirements for immigration purposes.

Section 183 of the Penal Code contains an HIV-specific provision stating that “Any person who unlawfully or negligently does any act which is, and which he knows or has reason to believe to be, likely to spread the infection of any disease dangerous to life, is guilty of a misdemeanour.” It is also possible that when read with the Penal Code, the Anti-Gender Based Violence Act of 2010 may criminalize HIV exposure and transmission. The Act defines sexual abuse, which is criminalized by the Penal Code, as “the engagement of another person in sexual contact, whether married or not, which includes...sexual contact by a person aware of being infected with HIV or any other sexually transmitted infection with another person without that other person being given prior information of the infection.”74

To date, no known prosecutions have occurred.69

3.1.6 Zimbabwe

Zimbabwe does not have an HIV-specific law. However, the Constitution and the Prevention of Discrimination Act of 1998 includes broad nondiscrimination provisions that should apply to people living with HIV. The Labour Relations Act (2002) nondiscrimination provisions include HIV status. This Act also prohibits mandatory HIV testing for purposes of employment. The National HIV and AIDS Policy of 2000 prohibits discrimination against people living with HIV. It also issues guidelines on voluntary HIV testing; however, reports indicate that people detained for sexual offenses are having mandatory HIV tests performed in public hospitals and not receiving pre-test or post-test counseling.69

The legal age of consent for HIV testing is 16 years.75 People younger than 16 can consent to HIV testing if they are determined to be mature enough to make a decision on their own, or if a person is symptomatic, sexually active, a survivor of sexual abuse, reports exposure to HIV, is concerned about mother-to-child transmission, or is concerned that if they test positive a parent or guardian will prevent them from accessing care or treatment. The HIV Testing Guidelines of 2014 stipulate that HIV testing can occur outside facilities or in community-based settings, and may be conducted by a lay provider. These guidelines also call for mandatory testing of tissue and organ donors, and of rapists. The Child Adoption Act of 2006 allows children up for adoption to be tested for HIV.

In 1996, Zimbabwe became the first African country to create an HIV-specific offense. In its current form, the Criminal Law Act criminalizes the exposure and transmission of HIV by those who suspect they are HIV-positive but are undiagnosed. It also criminalizes the willful transmission between husband and wife. Even in cases where a condom was used, people with HIV have been convicted of the willful transmission of HIV.69 To date, three known prosecutions and three known convictions have occurred for willful transmission of HIV.69
3.1.7 Recommendations

Ensuring equal protection for employees living with HIV may encourage people to seek HTS. Age requirements for HIV testing impede access to HIV testing for young people. Kenya, South Africa, Tanzania, and Zimbabwe have provisions that allow exceptions to the age of consent requirements for HIV testing services. Recognizing how age of consent laws may prevent young people from accessing HTS, Malawi and Zambia need to include provisions that allow for situations where younger people can consent to HIV testing. Laws that criminalize HIV transmission or exposure may discourage people from testing for HIV and being linked to care. These laws often target vulnerable populations such as sex workers and MSM. To address the harmful impacts of these laws groups are advocating for their repeal.

3.2 Sex Work

In all of the countries of interest, sex work is criminalized. Sex workers report widespread discrimination, stigma and human rights violations, including rape, assault, physical violence, arbitrary arrests, extortion, nonconsensual HIV testing, and confiscation of condoms for evidence by police. Outreach workers report experiencing harassment by police for distributing condoms. Discrimination is also perpetrated by religious and political leaders, as well as degrading treatment by health workers.

3.2.1 Kenya

In Kenya, the various aspects of sex work that are criminalized include living off the earnings of sex work, organizing commercial sex, and aiding, abetting, compelling or inciting prostitution. Although all genders are involved in sex work, women are often the ones targeted by law enforcement and they can be arrested by both secular and religious police for breaches of various municipal bylaws against loitering for the purposes of prostitution and indecent exposure. Additionally, in Kenya it is not illegal to buy sex. Because different state- or district-level governments can make rules on sex work, the laws often are not uniform throughout the country. Laws exist to prevent people living with HIV from selling sex or requiring them to disclose their HIV status to clients. The HIV/AIDS Prevention and Control Act of 2006 criminalizes HIV transmission, which may result in sex workers not accessing HIV testing and other healthcare services.

3.2.2 Malawi

In Malawi, sex work, per se, is not unlawful; however, the Penal Code criminalizes the exploitation of sex work. This means that practices such as procuring someone for prostitution, solicitation, living off the earnings of prostitution, and running a brothel are all criminalized. Nuisance and disorderly conduct laws are often used to arrest and harass sex workers. It is primarily women engaged in sex work who are the targets of enforcement, not their male counterparts who sell sex.
The National HIV Policy recognizes sex workers as a key population, but many sex workers indicate being unable to report violations of their rights, or being unaware of channels for reporting when their rights have been violated. Sex workers report that laws criminalizing their behavior make it hard to organize and access healthcare services.\textsuperscript{80}

\subsection*{3.2.3 South Africa}

For over 9 years, the South African Law Commission has been reviewing the legislation that criminalizes sex work, but has yet to report on the matter.\textsuperscript{69} Selling sex in South Africa is illegal by national laws and municipal regulations; that is, it is illegal to sell sex, buy sex, organize sex work, procure for prostitution, or assist a person to communicate with another person for purposes of commercial sex.\textsuperscript{78} Studies from Cape Town found that municipal bylaws relating to loitering or creating a public disturbance are often used to arrest sex workers.\textsuperscript{82} Police treat condoms as contraband, frequently confiscate condoms, and sometimes destroy them in front of sex workers. Police also perpetrate violence against sex workers.\textsuperscript{81}

In 2016, South Africa became the first African country to issue a National Sex Worker HIV Plan. The plan endorses Universal Test and Treat for sex workers, provides for a standardized minimum package of services to be implemented by all sectors, is based on a peer-led approach, and includes the provision of pre-exposure prophylaxis (PrEP) for sex workers. It also challenges the country to move toward legal reform to minimize the dangers that occur in a criminalized system.

\subsection*{3.2.4 Tanzania}

In Tanzania, it is illegal for people to live on the earnings of prostitution. Sex workers face high levels of abuse and violence,\textsuperscript{69,83} and in situations where they report this to police they are met with refusals to accept the complaints or demands for sex.\textsuperscript{83} The country has limited programs for sex workers, including those that target their HIV-related health needs.\textsuperscript{69} Sex workers report facing discrimination and unrealistic requirements when they try to access healthcare services.\textsuperscript{83}

\subsection*{3.2.5 Zambia}

Although prostitution is not defined in Zambian legislation, courts have recognized it as lewdness for money.\textsuperscript{78} The Penal Code prohibits soliciting and living off the earnings of sex work, procuring someone for the purposes of prostitution, and keeping a premise for the purposes of prostitution. Chapter 87 of the Public Order Act prohibits selling sex through laws that ban nuisance, loitering, and disorderly conduct. Buying sex is not illegal in Zambia.
Sex workers express severe human rights violations, but rarely formally report them because of stigma and discrimination. Some of these human rights violations are committed by law enforcement.

### 3.2.6 Zimbabwe

In Zimbabwe, it is legal to buy sex. However, although selling sex is not criminalized per se, most acts associated with selling sex are criminalized. The Miscellaneous Offences Act criminalizes loitering for the purposes of prostitution in a public place an offence. Pimping and running brothels is criminalized by the Sexual Offences Act. This Act also criminalizes fraternizing with sex workers. This means that someone who consorts, lives with, or is habitually in the company of a sex worker and has no visible means of subsistence, can be charged with knowingly living on the earnings of sex work.

Sex workers report problematic relations with law enforcement. Violence is very common, as is police confiscating condoms. In a survey of 21 sex workers in Zimbabwe, 85% reported that they had been extorted by the police. Zimbabwean women engaged in sex work have reported experiencing stigma and prejudice when seeking HIV-related healthcare services, and that they fear being mistreated by staff who consider them a waste of their time and resources.

### 3.2.7 Recommendations

The criminalization of sex work increases the likelihood that sex workers will experience violence perpetrated by law enforcement officials and discrimination by service providers and other citizens. The violence and discrimination sex workers experience increases when they also inject drugs or have same-sex sexual relations. Existing in an environment of criminalization results in many sex workers who are victims of violence believing they have no legal recourse. This is exacerbated in places where police are among the people who abuse them. Stigma toward male sex workers who have sex with men is exacerbated by homophobia. Criminalization, discrimination, and violence inhibit access to HIV services. Police confiscation of condoms increase sex workers’ risk of HIV and STI exposure, as well as unwanted pregnancy. The criminalization of HIV transmission can discourage sex workers from getting tested, and can also be used to punish sex workers who are unaware of their HIV status.

Because criminalization drives sex workers underground and away from healthcare, legal and other supportive services, multiple groups have called for decriminalizing both the buying and selling of sex. One study found that decriminalization could avert up to 46% of HIV infections in the next decade among FSW and their clients. Groups are also calling for decriminalizing the management of sex workers and brothels and other related sex work activities, decriminalizing sex work for young people, and ensuring equal protection under the law for all sex workers. Additionally, when sex workers’
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rights are violated, the perpetrators need to be held accountable.⁶⁹,⁷⁷,⁸¹,⁸⁶,⁸⁹ Law enforcement procedures need to be changed to prohibit the confiscation of condoms⁷⁶,⁷⁹,⁸¹ and police should not arrest, follow, or harass outreach workers.⁸¹ Countries need to adopt policies that allow sex workers who are victims or who witness of any type of violent crime to report those crimes and be guaranteed they will not be arrested for their involvement in sex work. As described in the HIV section of the policy review, most of the focal countries have laws and procedures in place that allow for mandatory HIV testing of sex workers. These laws and procedures need to be changed to prohibit mandatory HIV testing of sex workers.⁸⁹

3.3 Same-Sex Sexual Activity

A review of the six countries’ penal codes reveals that same-sex sexual activity is only legal in South Africa. Kenya, Malawi, Tanzania, and Zambia prohibit same-sex sexual activity among men and women. Zimbabwe prohibits same-sex sexual activity among men but permits same-sex sexual activity among women. Additionally, same-sex marriage is only recognized in South Africa.

Although each country’s Constitution states that all citizens are equal, antidiscrimination laws related to sexual orientation and gender only exist in South Africa, where all forms of anti-gay discrimination are banned and antidiscrimination laws are interpreted to include gender identity.

3.3.1 Kenya

Same-sex sexual activity is prohibited by Section 162 of the Penal Code and can carry a sentence as high as 14 years in prison.

In Kenya, LGBT individuals routinely experience personal and structural violence. Government agencies have denied some organizations that represent LGBT Kenyans the right to register and operate legally, based on the premise that they are promoting illegal behavior.⁹⁰ Political and religious leaders routinely propose homophobic policies and preach homophobic sermons. In 2008, 2010 and 2012, mobs attacked clinics and HIV workshops for MSM. Proposals to enhance anti-gay legislation led to a decrease in the number of people seeking HIV services and also resulted in the temporary closure of some clinics that provide HIV services to MSM.⁹⁰,⁹¹ Anti-gay sermons have resulted in the physical and sexual assault of MSM⁹² as well as vigilante attacks on organizations that provided services to MSM.⁹¹ In February 2016, two men were arrested on suspicion of having had sex with each other. During their arrest, they were forced to undergo anal examinations and HIV and HBV testing. They brought a petition to outlaw the practice and as of June 2016 the Kenyan Court ruled that using anal examinations to determine someone’s sexual orientation is legal.⁹³
Kenya’s Constitution guarantees all Kenyans the right to privacy, equality, dignity, and nondiscrimination. This provides the opportunity to eliminate laws and practices that discriminate on the basis of gender and sexual identity. During the Universal Periodic Review process at the UN Human Rights Council in January 2015, Kenya rejected recommendations to decriminalize same-sex conduct between consenting adults.90

3.3.2 Malawi

Same-sex sexual activity is prohibited by Article 153 of the Penal Code and can carry a sentence of 5 to 14 years in prison. Up until 2012, penalties in Malawi also included whipping.

Although Malawi purportedly ceased the arrests in 2012 of people for same-sex acts, as recently as 2015 two men were arrested on charges of homosexuality.94 In addition to the harm of arrest, the two men also experienced assaults by neighbors, threats, verbal abuse and attempted extortion by police (with police putting their pictures on social media), forced genital examinations, and HIV and STI tests.95 MSM in Malawi report experiencing stigmatizing and discriminatory behavior from healthcare workers. They also indicate that the threat of arrest prevents them from being able to report discrimination to law enforcement agencies.80 A study among MSM in Malawi found that they have been denied health services, been blackmailed when accessing health services, and that they are fearful to access services.96

3.3.3 South Africa

Same-sex sexual activity is legal in South Africa and compared with the rest of Africa, it has the most robust legal protections in place to prevent discrimination against LGBT individuals. Nonetheless, same-sex sexual conduct is still highly stigmatized. For example, violence against lesbians is increasing in South Africa, with gruesome cases of “corrective rape” and murder reported.97,98 These practices and beliefs clearly differ significantly from the hoped for impact of protective legislation.

3.3.4 Tanzania

Same-sex sexual activity is prohibited by Section 154 of the Penal Code and can carry a sentence of 5 to 30 years in prison. In practice, MSM and FSF are rarely, if ever, prosecuted under the law;99,100 however, they are commonly arrested and harassed by the police.69 For example, in January 2015 a transgender man and his female partner were arrested on suspicion that they violated the law against same-sex acts.99 They were detained for 2 days and had their pictures published in local papers.

The fact that same-sex acts are criminalized results in severe social stigma,100 which prevents many MSM from seeking healthcare services. Many MSM report that when they do access services they face discrimination and denial of care.
### 3.3.5 Zambia

Same-sex sexual activity is prohibited by Article 155 of the Penal Code and can carry a sentence of 7 to 14 years in prison.

In January 2015, Edgar Lungu, the anti-gay defense minister, was inaugurated as president of Zambia. Lungu not only refuses to acknowledge the human rights of LGBT people, but also repeats the widely believed falsehood that homosexuality is an un-African import, created by financial incentives from the West. MSM are routinely discriminated against and denied access to healthcare services.

Although it is common for MSM to be arrested and charged in Zambia under the Penal Code, the cases often result in acquittals because of lack of evidence. This does not mean people are not harmed in the process. In 2013, two men were arrested after members of the community took them to the police because of suspicions of same-sex sexual acts. After spending more than a year in substandard prison conditions, the men were acquitted. They have not been able to return to their homes because they fear for their safety. Also, a transgender woman who was accused of sodomy by a male partner was forced to undergo an anal examination.

### 3.3.6 Zimbabwe

Same-sex sexual activity among men is prohibited by Article 73 of the Criminal Law Act of 2004 and can carry a sentence of up to one year in prison and/or a fine.

Homophobia is pervasive in Zimbabwe. The media routinely publishes hostile comments about LGBT people made by political leaders such as Zimbabwe’s president, Robert Mugabe. During the 2013 presidential election, Mugabe threatened to behead LGBT individuals. Because same-sex sexual acts are criminalized, it is difficult for LGBT people to report when they have been victims of a crime or harassment because of fear of extortion and arrest.

The clandestine nature of Zimbabwe’s LGBT population compromises their ability to access healthcare services. Organizations that advocate or provide services to sexual minorities are harassed, have had their organizations raided, and employees have been arrested.

### 3.3.7 Recommendations

The criminalization of same-sex conduct increases the likelihood that LGBT people will experience violence from law enforcement officials, service providers, and other citizens. When LGBT people are involved in sex work, their vulnerabilities to violence increase. Existing in an environment of criminalization results in many LGBT victims of violence believing they have no legal recourse. This is exacerbated in places where the police are among the people who abuse them. Criminalization, discrimination, and violence inhibit access to HIV testing and linkage to HIV care.
To address the harms of criminalization, multiple groups have called for the decriminalization of all forms of consensual adult sex, including consensual sex between men, and the eradication of other punitive laws based on sexual orientation. Practices such as forced anal exams to determine someone’s sexual identity need to be outlawed. The Global Commission on HIV and the Law also calls for all persons currently incarcerated for same-sex sexual behavior between consenting adults to be considered as prisoners of conscience.

### 3.4 Injection Drug Use

In each of the six focal countries, the use of illicit drugs is criminalized. None of these countries offer drug consumption rooms, and Malawi, Zambia and Zimbabwe do not offer important harm reduction programs such as needle and syringe programs (NSPs) or opioid substitution therapy (OST). Kenya, South Africa, and Tanzania all offer NSPs and OST programs, though they are not offered to prison-based populations.

#### 3.4.1 Kenya

As of 2014, Kenya has 10 NSP sites, and although the Kenya National Guidelines for the Comprehensive Management of the Health Risks and Consequences of Drug Use 2013 do not specify age requirements, Harm Reduction International reports that youth are excluded. Although needles and syringes are also available for purchase from pharmacies and other outlets, pharmacists are reluctant to sell syringes to PWID. The Kenya Narcotic Drugs and Psychotropic Substances Control Act no 4 of 1994 Section 5 (1) penalizes drug paraphernalia, including syringes. The penalty for violating this provision is a fine of Ksh 200,000 or imprisonment up to 10 years or both. For more detail on programming, see the chapter on people who inject drugs.

Methadone OST was introduced in December 2014 as a primary element of the country’s HIV prevention and drug treatment strategy. This makes Kenya the third Sub-Saharan African country to introduce OST. Per Kenya National Guidelines for the Comprehensive Management of the Health Risks and Consequences of Drug Use 2013, OST is only available to people aged 18 years or older.

Reports indicate that PWID in Kenya are reluctant to access health services for fear of police being alerted.

#### 3.4.2 Malawi

Other than what was reported in the opening paragraphs of this section, no additional policy information is available about Malawi.
3.4.3 South Africa

South Africa currently has one NSP site that focuses their efforts on MSM who inject drugs. South Africa does not criminalize drug paraphernalia, including needles for injection drug use. However, Section 4 of the Drugs and Drug Trafficking Act of 1992 indicates that paraphernalia that contains drug residue can provide the basis for a drug use and possession charge if the drug can be identified through forensic analysis.

Although South Africa offers OST, it is unclear how many of these programs exist. It appears that OST in the country is restricted to just one government-funded site. Private OST provision is available in clinics, but is largely inaccessible by PWID because few have private health insurance. The South African Guidelines for the Management of Opioid Dependence suggests that individuals seeking OST should be aged 18 years or older. In cases where someone is younger than 18, the guidelines recommend that a second opinion be obtained from a specialist.

3.4.4 Tanzania

As of 2014, Tanzania has seven NSPs. Although Tanzania has demonstrated significant progress in implementing NSPs, possessions of needles is still criminalized, which creates barriers to service development and delivery. Age restrictions are not imposed on NSPs.

The first OST in Tanzania opened in 2011. The OST program in Dar es Salaam is the largest government-run program in the region. As of 2016, over 3500 people received methadone, and outreach workers made contact with around 20,000 PWID. Takeaway doses are not offered, and for some the cost to travel to the OST sites is an insurmountable barrier. There are no age restrictions for accessing OST.

In the first quarter of 2016, the Tanzania Ministry of Health and Social Welfare adopted a test and treat model for HIV among PWID in Tanzania, which appears to be the first in the region.

PWID have experienced severe human rights violations by health professionals and police in Tanzania. In 2011, after a person who injects drugs was attacked by a mob and went to the hospital, staff refused to use anesthesia when stitching up wounds. During the course of an arrest in 2010 of a person who uses heroin, a police officer injected the person’s eyes with a syringe full of acid. Consequently, it is not surprising that reports indicate that PWID are reluctant to access government health services for fear that police will be notified.

3.4.5 Zambia

Because the Narcotic and Psychotropic Substances Act lists methadone, buprenorphine, and naloxone as controlled substances, OST is not available in Zambia. Other important harm
reduction services and interventions for PWID are also limited by this Act because they are considered to be aiding and abetting drug use.

Reports out of Zambia indicate that the police use broad discretion in enforcing drug laws. One such example is when the primary person is not located they will arrest and detain family members and friends.\textsuperscript{112}

\subsection*{3.4.6 Zimbabwe}

Other than what was reported in the opening paragraphs of this section, no additional policy information was available about Zimbabwe.

\subsection*{3.4.7 Recommendations}

Although scale-up of harm reduction services is improving in Kenya, South Africa and Tanzania, it has not grown in proportion to the HIV epidemic among PWID.\textsuperscript{106} The limited to complete absence of services, coupled with criminalization of drug use, inhibits HIV risk reduction.\textsuperscript{114} The legal and policy barriers, in addition to widespread discrimination and stigma, create unsafe injection practices and barriers to accessing services.\textsuperscript{69,106} Criminalization also results in a high proportion of PWID being incarcerated. Prison conditions may contribute to higher rates of HIV transmission because of the lack of sterile equipment and OST.\textsuperscript{114}

To ensure equitable access to nonjudgmental, health-promoting services and to reduce stigma and human rights violations, many groups are calling for the decriminalization of personal drug use and possession.\textsuperscript{69,77,113} Similarly, all PWID, including those incarcerated, need access to harm reduction services such as NSPs and OST, and these can serve as launching points for HTS.\textsuperscript{113}

\section*{3.5 Gender-Based Violence}

Gender-based violence (GBV) is linked to HIV in multiple ways, including increasing exposure to HIV and limiting a person’s ability to seek health services.\textsuperscript{115}

\subsection*{3.5.1 Kenya}

The Sexual Offences Act of 2006 prohibits various forms of sexual violence offenses committed against men and women, including rape, sexual assault, and sexual exploitation of children. A major limitation is that neither this Act, nor the Protection against Domestic Violence Bill, 2013, recognizes marital rape as a criminal offense.\textsuperscript{69}

Kenya’s Marriage Act of 2014 and Matrimonial Property Act reinforce equality rights in marriage and on divorce and in terms of matrimonial property. The Marriage Act sets the age of marriage at 18 years and gives a spouse equal rights to matrimonial property.
3.5.2 Malawi

Malawi’s Prevention of Domestic Violence Act, 2005, protects women from domestic violence in all relationships, but it does not criminalize marital rape. The Penal Code defines rape as an act that happens outside of marriage and that consent to sex is implied upon marriage. Most Malawian women believe that they have to have sex with their husbands even if they do not want to.77

Although the Constitution states that the minimum age for marriage is 18 for both boys and girls, it permits marriage between the ages of 15 and 18 with parental consent.

3.5.3 South Africa

South Africa’s Domestic Violence Act (DVA) of 1998 (revised 2006) provides for anyone in abusive domestic relationships to obtain protection from the law. It also says that the courts can convict a man of raping his wife.69

The Children’s Act of 2005 states that the minimum age someone can consent to marriage is 18.116 In situations where no parents or guardians exist, or where people cannot give consent, a magistrate may grant consent.

3.5.4 Tanzania

Various protections for women and girls are provided by the Sexual Offences Sexual Provisions Act, including the recognition of sexual harassment as a punishable offense and protecting women from marital rape if they are separated from their husband. If the woman is not separated from her husband, marital rape is not criminalized.

In Tanzania, the Law of Marriages Act (1971) provides that girls may marry at the age of 15 with the consent of parents or guardians. If a girl is an orphan, no consent is required.

3.5.5 Zambia

The Gender-Based Violence Act passed in 2011 prohibits physical, sexual, economic and psychological violence. Even with this in place, levels of violence against women and girls continue to be an issue of concern.69 Marital rape is not criminalized in Zambia.

The Marriage Act sets the legal age for marriage at 18 for females and 21 for males. However, under traditional law, marriage can take place at puberty.

3.5.6 Zimbabwe

Through the Sexual Offences Act, 2000, women are protected against sexual violence, including marital rape. Although marital rape is criminalized, the permission of the Attorney General is needed before a prosecution can be launched.77 The Domestic Violence Act of 2007 criminalizes all forms of psychological, emotional, economic, physical, and sexual violence. The Multi-Sectoral Protocol on Sexual Abuse was established in 2012 by the
Judicial Service Commission, with the intent to improve Zimbabwe’s response to sexual abuse and GBV. Donor funding is being used to implement the protocol.69

Although Zimbabwe’s Constitution sets 18 as the age of marriage, Section 21 of the Marriage Act sets the age for girls at 16 and for boys at 18. A current proposed amendment is attempting to make the marriage age the same for all people.117 No legal age of marriage is established by the Customary Marriages Act, which results in early marriages before the age of consent. Some religious groups in Zimbabwe marry girls off before the age of 13.117

### 3.5.7 Recommendations

Reducing GBV for groups at heightened risk of HIV is a crucial component of any comprehensive HIV prevention strategy. Many customary laws discriminate against women in marriage and inheritance, and these laws increase women’s vulnerability to HIV.77 Laws and practices that allow girls to marry younger than 18 puts them at an increased risk for HIV infection and isolation from healthcare services.69 These laws and practices need to be amended.

### 3.6 Prison

Throughout Africa, prisons remain severely overcrowded. This overcrowding, along with sexual violence, poor conditions, consensual same-sex sexual activity, transactional sex and injection drug use, contributes to the spread of HIV among people who are incarcerated.65,69,80

#### 3.6.1 Kenya

Prison occupancy rates in Kenya range from between 300% to 345% of planned levels.118 Data indicate that injection drug use is on the rise among people who are incarcerated.118 Voluntary HIV testing is available in all prisons. Based on a review of 25 prisons in all eight provinces in Kenya, counseling rooms are only available in 70% of prisons, and only 38% of those offer visual and auditory privacy.119 HIV treatment is available in Kenyan prisons. Data from the previously mentioned review indicate that 77% of prisons had at least one staff trained on ART, but only 41% of the prisons had at least one staff member who was trained in comprehensive HIV care.120

#### 3.6.2 Malawi

Prison occupancy rates in Malawi are about 200% of planned levels.118 Laws criminalizing same-sex sexual activity result in the prohibition of condom distribution in prison.65,80 Data from a retrospective cohort study of patient files at ART clinics in Malawi revealed that although treatment access has improved among the general population, people who are incarcerated rarely have access to ART.121
3.6.3 South Africa

South Africa has the highest prison population in Sub-Saharan Africa, and occupancy rates range from 120% to 170% of planned levels. Condoms can be provided by the Department of Correctional Services; however, they are not consistently available. Voluntary HIV testing is available for people who are incarcerated. HIV treatment is available in South African prisons. Based on the 2014/2015 Annual Report issued by the Department of Correctional Services, 97% of people who are incarcerated who have HIV are on ART. Reports indicate that people who are incarcerated may not always have consistent access to ART. In one such case, a man who told prison officials about his HIV status was never taken to the clinic and was not allowed to get his medication from his family.

3.6.4 Tanzania

Prison occupancy rates in Tanzania are at about 200% of planned levels. Injection drug use among people who are incarcerated is increasing. Laws criminalizing sodomy are used to justify not providing condoms in prisons. Access to HIV testing services or HIV treatment is not available.

3.6.5 Zambia

Prison occupancy rates in Zambia range from 300% to 345% of planned levels. Chronic food shortages plague the prison system, causing people to exchange sex for food.

The Zambian National HIV/AIDS Policy includes prisoners and makes a commitment to providing voluntary HIV counseling and testing and treatment programs. Although mandatory HIV testing seems to be prohibited in prison, some reports indicate that mandatory testing exists for pregnant women. Access to HIV testing has expanded over the years, but testing services are more readily available in larger prisons and for men. Similarly, access to ART has improved primarily in larger prisons. Because Zambia does not have prison-based health services, it is impossible for prisons to offer comprehensive HIV care.

Zambian prison policy calls for HIV prevention services and resources, and public health advocates call for condom provision. Condoms, however, are prohibited and considered contraband. The Zambia Prisons Service HIV and AIDS/STI/TB Strategic Plan 2007–2010 claims that condom distribution is forbidden by law. The criminalization of condoms is linked to the criminalization of same-sex sexual activity in the country.

3.6.6 Zimbabwe

To ease overcrowding within Zimbabwe’s 46 prisons, president Mugabe pardoned at least 2000 prisoners in May 2016. Those convicted of sexual offenses are among those not eligible for a pardon. Condoms are not provided in prisons. In 2013, Douglas
Muzanenhamo, a Zimbabwean resident filed a constitutional application seeking an order that would require prisons to provide ART to people who are incarcerated. While he was incarcerated for a month in 2011, prison officials denied him access to ART, which caused his health to suffer. He filed this application after the Supreme Court did not rule on the case he brought in 2012. Although the case has been heard, no information about the ruling could be found.

3.6.7 Recommendations

Overcrowding in prisons increases vulnerability to HIV infection, contributes to sexual violence, and disrupts access to HIV testing and harm reduction materials. Countries that prohibit condoms in prison are creating a risk of HIV transmission as well as obstacles to health-promoting materials. WHO, United Nations Office on Drugs and Crime (UNODC), and UNAIDS have noted that condom provision in prisons is feasible, acceptable, and does not compromise prison safety or security.

Best practices indicate the need for distribution of condoms and water-based lubricant. They also highlight the need to provide people with condoms prior to their release. Prison administrations need to put into place policies and practices that create a safer environment that decreases the risk of HIV transmission within the prison system.

Although offering HIV testing in prisons is important, it must be voluntary, include adequate pre- and post-test counseling, provide informed consent, and include an assurance of confidentiality of test results. Compulsory testing for HIV should be prohibited.

While incarcerated people are at risk of disruption in HIV treatment services, or failure to initiate ART when appropriate, ART needs to be available in all prisons. This will require all prisons to have healthcare systems with the requisite providers and spaces for healthcare provision.

As indicated in the section on policy around PWID, none of the focal countries offer OST or NSP to people who are incarcerated. Those who are on OST prior to imprisonment should be allowed to continue their treatment while in prison. Similarly, in those countries that provide OST, people who are incarcerated should be allowed to initiate OST while in prison. In order to prevent HIV transmission, important harm reduction supplies such as bleach, sterile syringes, and needles should be provided while people are incarcerated as well as prior to release when requested.
4. FEMALE SEX WORKERS

A large evidence base exists documenting HIV risk behaviors among female sex workers (FSW) in Sub-Saharan Africa, and there is a growing literature examining HTS. Our literature search identified 419 citations (after removal of duplicates). Title and abstract review excluded 397 citations and full-text review excluded an additional 15 citations. Seven peer-reviewed papers based on original research met the inclusion criteria, in addition to 12 sources from the gray literature, as shown in Figure 4-1. Of the research presented, three studies took place in South Africa, eight studies in Kenya, two studies in Malawi, four studies in Zimbabwe, and two studies in Tanzania. Literature sources included in this review are described in Appendix E, Table E-1. A summary of key information and quality assessment criteria is shown in Table 4-1.

4.1 Primary Barriers and Facilitators to HIV Testing Services for Female Sex Workers

4.1.1 Studies 1, 2, and 3: Female Sex Workers Have High Rates of HIV Testing

Research indicates high rates of HIV testing among FSW. An unpublished cross-sectional study of FSW in South Africa (n=410) found that prior history of HIV testing and diagnosis was greater than 80%.132 The Kenya National AIDS Control Council and the National AIDS and STI Control Programme oversee 82 combination intervention programs across the country. A baseline polling booth survey was conducted under the Kenya National AIDS Strategic Plan (KNASP) to examine HIV risk behaviors among FSW, MSM, and PWID who utilize combination services. A two-stage, stratified cluster sampling procedure was used to recruit 5,446 participants to take part in a polling booth survey. Of the total sample, 3,448 were FSW.133 Nearly all FSW (93.9%) reported ever having been tested for HIV and 72.4% reported being tested for HIV in the past 3 months.

In Malawi, HIV prevalence among FSW is 70%, among the highest globally. A study was conducted in Lilongwe to characterize the HIV care continuum among FSW and to examine associations between continuum outcomes, demographics, and risk behavior.134 Using venue-based sampling, 200 FSW were recruited in 23 venues (e.g., bars and bottle shops) by an outreach team consisting of HIV testing counselors, interviewers, a study nurse, a male driver for the mobile clinic, and a peer FSW. Trained interviewers administered a structural behavioral survey, HIV testing counselors confirmed HIV serostatus, HIV-positive participants had plasma HIV-1 RNA and CD4 measurements, and were referred to a nearby clinic in Lilongwe for follow up and enrollment in care. The study measured HIV case diagnosis, history of HIV care, current ART use, and viral suppression. Among the HIV positive FSW, 20% were newly diagnosed (95% CI: 13%, 26%, n=27). Of these, 74% (95% CI: 54%, 89%, n=20) had tested negative previously, 19% (95% CI: 6%, 38%, n=5)
had never tested, and 7% (95% CI: 1%, 24%, n=2) had tested but not received results. Among newly diagnosed FSW that had previously tested negative, the median time since last HIV test was 11 months (IQR: 3–17).\textsuperscript{134}

**Figure 4-1. Flow Diagram of Study Selection Process**
Table 4-1. Summary Table of Study Inclusion and Quality for Female Sex Workers

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author</th>
<th>Country</th>
<th>Study Type</th>
<th>Barrier (B), Facilitator (F), or Intervention (I)</th>
<th>Main Outcome(s) Related to this Review</th>
<th>Quality Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Schwartz, 2015</td>
<td>South Africa</td>
<td>Qualitative</td>
<td>B, F</td>
<td>Prior history of HIV testing and diagnosis</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>2</td>
<td>Bhattacharjee, 2015</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>B, F</td>
<td>Ever and recent testing</td>
<td>cross sectional survey; large sample size (3448)</td>
</tr>
<tr>
<td>3</td>
<td>Lancaster, 2016</td>
<td>Malawi</td>
<td>Quantitative</td>
<td>B, F</td>
<td>HIV care continuum</td>
<td>cross sectional survey; small sample size (200)</td>
</tr>
<tr>
<td>4</td>
<td>Napierala, 2015</td>
<td>Zimbabwe</td>
<td>Quantitative</td>
<td>B, F</td>
<td>HIV testing, status knowledge, and ART use</td>
<td>cross sectional survey; large sample size (2722)-abstract only</td>
</tr>
<tr>
<td>5</td>
<td>Bengston, 2014</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>B, F</td>
<td>HIV testing and alcohol use</td>
<td>cross sectional survey; large sample size (818)</td>
</tr>
<tr>
<td>6</td>
<td>Beckham, 2015</td>
<td>Tanzania</td>
<td>Qualitative</td>
<td>B, F</td>
<td>Impact of motherhood on engagement in testing and linkage</td>
<td>Theoretical framework, IDIs and FGDs</td>
</tr>
<tr>
<td>7</td>
<td>Scorgie, 2013</td>
<td>Kenya, South Africa, Zimbabwe</td>
<td>Qualitative</td>
<td>B</td>
<td>Impact of stigma on engagement in HIV services</td>
<td>Theoretical framework, IDIs and FGDs in multiple countries</td>
</tr>
<tr>
<td>8</td>
<td>Mtetwa, 2013</td>
<td>Zimbabwe</td>
<td>Qualitative</td>
<td>B</td>
<td>Reasons for clinic non-attendance</td>
<td>No theoretical framework identified, 3 FGD only</td>
</tr>
<tr>
<td>9</td>
<td>Beckham, 2013</td>
<td>Tanzania</td>
<td>Qualitative</td>
<td>B</td>
<td>Impact of stigma on engagement in HIV services</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>10</td>
<td>Mack, 2014</td>
<td>Kenya</td>
<td>Qualitative</td>
<td>B, F</td>
<td>Stakeholder insights on barriers/facilitators to testing</td>
<td>Consultations and breakout group FGD; no theoretical framework identified</td>
</tr>
<tr>
<td>11</td>
<td>Mwayuli, 2014</td>
<td>Kenya</td>
<td>Qualitative</td>
<td>I</td>
<td>FSW-initiated demand for HIV testing and counseling as well as other services and referrals</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>12</td>
<td>Phiri, 2014</td>
<td>Malawi</td>
<td>Quantitative</td>
<td>I</td>
<td>program data on number tested and referred to linkage to care</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>13</td>
<td>Muthumbi, 2013</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>I</td>
<td>program data on number of FSW who receive combination services</td>
<td>N/A abstract only</td>
</tr>
</tbody>
</table>

(continued)
### Table 4-1. Summary Table of Study Inclusion and Quality for Female Sex Workers (continued)

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author</th>
<th>Country</th>
<th>Study Type</th>
<th>Barrier (B), Facilitator (F), or Intervention (I)</th>
<th>Main Outcome(s) Related to this Review</th>
<th>Quality Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Mohammed, 2013</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>I</td>
<td>program data on service uptake</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>15</td>
<td>Hanisch, 2014</td>
<td>Zimbabwe</td>
<td>Quantitative</td>
<td>I</td>
<td>program data on service uptake</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>16</td>
<td>Cowan, 2015</td>
<td>Zimbabwe</td>
<td>Quantitative</td>
<td>I</td>
<td>program data on HIV testing uptake</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>17</td>
<td>Ndeda, 2013</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>I</td>
<td>program data on utilization of services and experiences of harassment</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>18</td>
<td>Nogoduaka, 2014</td>
<td>South Africa</td>
<td>Qualitative</td>
<td>I</td>
<td>development of programmatic framework for cross agency coordination</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>19</td>
<td>Aungo, 2014</td>
<td>Kenya</td>
<td>Qualitative</td>
<td>I</td>
<td>decreased faith-based protests, and decreased reported incidents of violence against</td>
<td>N/A abstract only</td>
</tr>
</tbody>
</table>
4.1.2 Studies 4, 5, and 6: Demographic and Behavioral Correlates to HIV Testing and Access to Care Among Female Sex Workers

Despite evidence of high rates of testing, barriers to HTS still exist. Some of these barriers are demographic and behavioral. Mavedzenge et al. presented findings from a sample of 2,722 FSW recruited through respondent-driven sampling (RDS) in Zimbabwe. They compared women under age 25 with women over age 25 and found that women under 25 who were HIV-negative were moderately more likely to have tested in the past 6 months (75% vs. 68%, p=0.08). However, among women who were HIV-positive, those under age 25 were less likely to know their status (39% vs. 69%, p<0.01) and to report ART use (58% vs. 69%, p=0.05).

Another study examined the association between levels of alcohol use and never having been tested for HIV among FSW who use alcohol in Mombasa, Kenya. FSW (n=818) completed a baseline interview and were asked about HIV testing frequency, regardless of HIV status. Women who reported harmful alcohol consumption were 1.60 times more likely to have never tested for HIV, compared with women with lower alcohol consumption. Additionally, being age 31 or older was independently associated with never having tested for HIV (PR 1.98; 95% CI: 1.06, 3.70), while having at least one child (PR 0.39; 95% CI: 0.24, 0.64) was associated with previous HIV testing.

Similarly, Beckham et al. reported that motherhood is a facilitator for HIV testing among FSW in southern Tanzania. In qualitative interviews with 30 FSW and three FGDs with 22 FSW, HIV risk behaviors were examined as they intersect sex, work, and motherhood. Women expressed an increased desire to test for HIV because of having dependent children. HIV testing was seen as the initial step in accessing treatment if needed, to assure they were able to raise children into adulthood. As one woman expressed:

"Now then, I was keeping in mind that first I have a small child. That child still depends on me. If I die today, my child will suffer, and here I am without a father and without a mother. And I went in and I tested."

4.1.3 Studies 7, 8, 9, and 10: Stigma as Individual and Structural Barriers to Accessing Healthcare Among Female Sex Workers

Several studies indicate that the experience of intense stigmatization within healthcare environments is a barrier to accessing health services for FSW. One study conducted in four countries, including Kenya, South Africa and Zimbabwe, examined sex workers’ experiences seeking public and private healthcare, barriers to accessing these services, and how services might be better tailored to address their needs. Over the course of one year, 106 FSWs were recruited through snowball sampling and participated in semi-structured interviews with trained peer educators who were affiliated with the African Sex Worker Alliance. With regard to healthcare in general, participants cited experiences of healthcare-worker hostility and even denial of treatment based on their sex worker status.
Discrimination, participants explained, could also extend to family members of sex workers. One comment from a woman residing in Mombasa, Kenya, is emblematic of the hostility faced:

“When I fell sick and went to a health centre and they realised that I was a sex worker, they did not treat me like a human being. When the health worker came to attend to me she said that I should go to the other health worker and when I reached the other health worker, I was told that he had no time for me. So I left without getting treatment.”

Another key issue cited in this study is the lack of confidentiality when sex work is disclosed to providers. In some cases, sex work may be disclosed to family members by healthcare providers without patient consent. With respect to HIV services, one-third of participants knew their status, while some reported lack of knowledge about where to get an HIV test and lack of transportation as barriers to testing. The impact of discrimination within healthcare settings was found to be a major qualitative theme by having an impact on sex workers’ willingness to get tested for HIV. Further, once diagnosed, stigma and discrimination had an impact on sex workers’ willingness to disclose their status and initiate treatment. Three participants also reported being forced to have an HIV test without full consent.

Though women expressed other barriers, such as financial and logistical barriers, several women reported a fear of mistreatment as a primary factor actively dissuading them from attending the clinic. A qualitative study conducted in Zimbabwe examined the issue of attrition among FSW in the early stages of establishing HIV care. The Sisters with a Voice (Sisters) clinics included one static and four mobile sex worker health centers that offer free HIV testing and counseling, health education, and referral for CD4 counts and ART initiation, among other health and legal aid advocacy services for FSW. Routine medical record review indicated that while many FSW were receiving HIV testing, few took up referrals to HIV treatment services. The aim of this study was to explore specific barriers and facilitators to engagement with care and identify possible interventions to ensure FSW retention in HIV-related services. Three FGDs with 38 women were conducted, with women referred to the study from the Sisters clinics. Women in the FGDs reported active discrimination and even humiliation by hospital staff as reasons for attrition. As one woman recounted:

“She opened my file and I saw her face just changed instantly, and she actually frowned and looked at me like I was disgusting her. Her first words to me were, ‘so you are a prostitute and you actually have the guts to come here to waste our time and drugs on you, why do you do such things anyway? Why can’t you find a man of your own and get married?’

In all three FGDs, women described unwanted public disclosure of their sex worker status by hospital staff:
"We were in the queue with everyone else when suddenly one of the nurses came out and loudly said ‘the sex workers who have come … please go and queue at the back of this line, we will attend to you last.’ Everyone there turned and you could see they were all eager to see who these women were. We dragged our feet and went to the back. Luckily there were six of us, so at least the embarrassment and humiliation was somehow shared amongst ourselves and we just had to pretend like we didn’t care. I remember one lady who had also been referred from here actually walked away and left, we never saw her again...shame/embarrassment is worse than death, ladies!”

In an unpublished qualitative study in Tanzania, Beckham et al.\textsuperscript{140} also found that FSW rarely disclosed their occupation in healthcare settings for fear of discrimination, limiting the extent to which they can access appropriately tailored care and risk-reduction counseling. Similarly, a focus group study with community-based providers in Kenya found that from a provider perspective, stigma was a major barrier to FSW’s willingness to be tested for HIV.\textsuperscript{141}

4.2 Strategies Used to Improve HIV Testing Services for Female Sex Workers Identified in the Literature

4.2.1 Studies 11 and 12: Reaching FSW Outside of Traditional Health Care Settings

To combat the phenomenon of attrition of FSW in traditional healthcare settings, “Moonlight Outreach Models” (MOM) or Moonlight Testing Programs have been developed to bring health services, including HIV testing and counseling, to the spaces in which FSW typically work or live and at times of the day that can have the greatest impact, such as “hotspots” at night for sex work.

Moonlight programs require advanced coordination with multiple stakeholder groups, such as the local gatekeepers in sex work hotspots, the police, service providers, and local business owners. Between 2011 and 2013, HIV testing and counseling, STI screening, condom/lubricant distribution, gender-based violence awareness counseling, health education, and referrals were provided at 36 mobile MOM locations in the Mombasa region of Kenya. This program reached 2,476 FSW with HIV testing and counseling services. Unpublished qualitative data collected with FSW about their experiences accessing moonlight outreach indicates increased FSW-initiated demand for HIV testing and counseling, in addition to the other services provided at the site.\textsuperscript{142}

A similar program based in the Zomba District in Malawi aimed to reach “hospital shy” FSW by setting up moonlight outreach services in hotspots near pubs and entertainment centers. In this program, collaboration with business owners and performers at local pubs was central to creating interest in moonlight services—at times performers would announce the arrival of the HIV testing and counseling van and encourage patrons to attend. In a
conference presentation, Phiri and Misoya\cite{143} reported that between April and November 2013 this moonlight program tested 423 clients, of which 48% were women. Among women who reported being FSW, 67 tested positive at the site and were referred to the nearest health facility for CD4 testing and linkage to care.

4.2.2 Studies 13, 14, 15, and 16: Transforming Healthcare Settings to Address Barriers for Female Sex Workers

Another model to address FSW-specific barriers to accessing care in traditional healthcare settings has been to establish drop-in centers in high HIV burden areas that are attentive to the need for safe, nonjudgmental provision of care, and nontraditional modalities targeting FSW. Since 2012, in the Homabay and Migori counties of Nyanza Province in Kenya, six drop-in centers established by the International Medical Corps have been offering services specifically targeting key populations: HTC, HIV care and treatment, STI screening and treatment, primary care, and services for people who use drugs. According to the findings from an unpublished presentation, FSW who receive combination HIV prevention services at the drop-in center numbered 1,145 in 2012 and 1,299 in 2013. Of the 2,569 FSW enrolled in the drop-in centers in 2013, 2,125 received HIV testing and counseling, 17% tested HIV positive, and 84% of those testing positive were enrolled into care/treatment.\cite{144}

In Nakuru, Kenya, peer educators staff a drop-in center for FSW and MSM and are responsible for peer health education and the provision of services. A presentation of the unpublished results showed that after 3 months of operation, 2,500 FSW accessed this service model that emphasizes empowerment and community-based approaches to serving the most-at-risk populations.\cite{145}

In 2007, Zimbabwe’s National AIDS Council conducted a pilot intervention among FSW, creating one drop-in and four outreach centers, staffed by nurses, outreach workers, and trained peer educators offering HIV testing and counseling, ART referral, and STI treatment, among other health services. This pilot intervention developed into “Sisters With a Voice” in 2009 (referenced above), which is Zimbabwe’s National Sex Worker Programme. In an unpublished conference presentation, the authors reported that initial service uptake was high, and that by 2013 six static drop-in centers and 30 outreach centers had been added. By late 2013, 12,383 unique FSW had accessed services, resulting in 33,151 client visits. The authors suggest that FSW involvement in program planning and service provision has promoted the high utilization of services by FSW.\cite{146} In an unpublished conference plenary in 2015, updated data from the Sisters program indicated that by the end of 2014 the program had seen more than 24,000 individual women at more than 56,000 visits.\cite{147} They had conducted more than 7,500 HIV tests, and more than 3,200 women have been diagnosed as being HIV positive and referred for ART services.
Section 4 — Female Sex Workers

4.2.3 Studies 17, 18, and 19: Cross-Agency Collaboration to Address Structural Issues for Female Sex Workers

At the structural level, interagency coordination has been identified as a strategy to potentially improve services for FSW. In the Homabay and Migori Counties of Western Kenya, five county Most-At-Risk Population (MARP) Task Forces were established under the auspices of the County Commissioners and Medical Officers of Health. These task forces bring NGOs, CBOs, bar and brothel owners, sex workers, and religious leaders together to advocate for combination HIV prevention services among key populations, promote human rights, and fight stigma. Though few details of service provision or measures were provided, authors reported in a conference presentation that after task forces were established, FSW support group registration increased, sex worker reports of harassment by the policy reduced significantly, enrollment in care and treatment for FSW increased, as did retention.\textsuperscript{148} A similar model of cross-agency coordination took place in South Africa and resulted in a National Sex Work Strategic Plan, which brought government, civil society organizations, sex workers, and other relevant stakeholders together to develop a programmatic framework for the provision of high-quality HIV services for sex workers.\textsuperscript{149}

A 2014 presentation reported that along the Kenyan coast, the APHIAplus Project forged collaborations between government officials, health practitioners, representatives from key populations, and religious leaders to address Islamic protests against key population-focused interventions that were hindering utilization of services. Thematic forums were held to bring stakeholders together and reframe interventions for key populations as communitywide health and rights issues, to discuss the intersection of spiritual obligations, and to help prioritize HIV risk reduction. These thematic forums resulted in facilitating Islamic faith-based organizations to provide services to key populations such as PWID and FSW, decreased protests, and decreased reported incidents of violence against MSM and FSW.\textsuperscript{150}

4.3 Ongoing Research and Programming

4.3.1 National and Other Multisite Combination Programs

Sisters With a Voice: Zimbabwe’s National Sex Worker Programme

This program came about through the recognition that in Zimbabwe’s National AIDS Strategic Plan 2006–2010 no action framework for vulnerable populations had been developed. A situational analysis was commissioned in 2007 by the National AIDS Council (NAC) and other groups. The recommendations arising from this led to the establishment of the National Sex Worker Program, Sisters With a Voice (“Sisters”—described in studies 8, 15, and 16; www.ceshhar.org.zw/our-work/key-populations), which is embedded within NAC’s National Behaviour Change Programme. The Sisters program is a comprehensive
HIV/STI program for FSW (Figure 4-2). It was established with five clinic sites in 2009, and was expanded to 36 static and mobile sites.

Figure 4-2. The Sisters With a Voice Program and the SAPPH-IRe Trial

nationally by 2013. The program was developed in close consultation with sex workers and other stakeholders, and follows WHO/UNAIDS guidelines for sex worker programming. Each clinic site serves a community catchment area with clinic services, including HIV testing and referral to government HIV care services as needed, health education, syndromic STI management, contraception, cervical cancer screening, and legal advice. As of December 2015, over 35,000 individual women had visited the program in over 96,000 visits. Clinic sites had performed over 13,000 HIV tests, and over 4,600 women had been diagnosed HIV-positive and referred to ART services (with the yield reducing over time).

Embedded within the Sisters program is the Sisters Antiretroviral therapy Programme for Prevention of HIV—an Integrated Response (SAPPH-IRe; PI Frances Cowan) trial (Figure 4-2). This is a cluster-randomized trial of enhanced ART prevention and treatment,
including PrEP. The goal is to reduce the prevalence of all FSW with a detectable HIV viral load, defined as >1000 copies/ml. Fourteen of the Sisters sites are trial sites, with random allocation of seven matched sites to the intervention arm. The intervention includes the usual care provided at all Sisters sites, as described above, plus a repeat HIV testing program and offer of PrEP for women with an HIV negative test result, point of care CD4 testing, and on-site ART provision for women who are HIV-positive, as well as intensified community mobilization with SMS adherence support (for routine HIV testing, PrEP and ART), and an “adherence sisters” program where peers provide support for adherence. A cost-effectiveness analysis is also being conducted. A baseline survey was conducted in 2014 among 2,722 women using RDS in each of the 14 communities (described in study 4). Overall, HIV prevalence was 57.5%. Of those, 64% reported knowing their HIV status, and 43% had linked to care and were on ART. An endline RDS survey was conducted in April–May 2016 among 2,883 women. The trial results will be presented at the International AIDS Conference in Durban, South Africa, in July 2016.

Evidence from Zimbabwe (see study 4 above) and other countries indicates that young sex workers are far less likely to engage in HIV services than their older counterparts. Through the DREAMS initiative funded by PEPFAR and others, Sisters program sites are also implementing a “Young Sisters” program that is designed to increase engagement in HIV services of young women who sell sex (who may or may not identify as sex workers). This program is evidence-based, follows WHO and UNAIDS guidelines for programming for young women who sell sex, and was developed in collaboration with young women who sell sex in Zimbabwe. The program was pilot tested in three sites in 2014, and will now be refined and expanded to six sites through DREAMS. Given the high rate of HIV acquisition among young sex workers, the program focuses largely on HIV prevention, including a program to promote routine testing. Self-testing, based on the evidence from an ongoing self-testing study among sex workers in Zimbabwe (see below), may be integrated into the Young Sisters program and to the Sisters program more broadly through the STAR program (see below).

4.3.2 South Africa’s National Sex Worker Strategy

South Africa recently published the results of a national survey of FSW, the South Africa Health Monitoring Survey (SAHMS) FSW National Survey Report. The survey indicated that over 96% of FSW in Johannesburg, Cape Town, and Durban had ever tested for HIV. Testing in the past 12 months was substantially lower and varied across cities (Johannesburg 46%, Cape Town 71%, Durban 51%). Despite an overall HIV prevalence of 54% among FSW in Durban, 60% perceived their risk of HIV infection to be small, which may contribute to relatively low recent testing in this community. In Johannesburg and Cape Town, just under half perceived their risk of HIV to be small, whereas HIV prevalence was 72% and 49%, respectively. The survey results estimate that 74%, 57%, and 77% of FSW in Johannesburg, Cape Town and Durban, respectively, are aware of their HIV status,
and 67%, 43%, and 55%, respectively, had sought care. Substantially fewer FSW (19% Johannesburg, 26% Cape Town, 28% Durban) are estimated to be taking ART.

The results of this survey, along with more than a decade of research and interventions among sex workers in South Africa, have helped to inform South Africa’s recently released National Sex Worker Strategy. This strategic document is expected to provide a framework to service providers to create an environment that will enable and empower sex workers to reduce their own risk of HIV and other STI acquisition and/or transmission, to seek and get appropriate early diagnosis and treatment of HIV and other STIs, and to address structural issues related to HIV and sex work. Among other activities, this strategy calls for provision of a minimum package of comprehensive sex worker-focused services, inclusive of HIV testing and other HIV services, sensitization of service providers, and advocacy efforts.

4.3.3 The Liverpool Voluntary Counseling & Testing (LVCT) Health Key Populations Program

LVCT is an indigenous NGO in Kenya focusing on providing HIV and reproductive health services to populations most vulnerable to HIV (www.lvcthealth.org). The LVCT Health KP program was initiated in 2005 and is being implemented in Nairobi and Kisumu. LVCT Health provides tailored HIV prevention, treatment, and care services for sex workers and MSM. Community outreach is a mainstay of the program, which provides comprehensive packages of services for HIV-infected and uninfected individuals through central clinics, supported by a network of satellite clinics and peer support. For HIV-uninfected individuals, there is 3-monthly HIV testing and counselling. On-site provision of HIV care and treatment is also available for those testing positive, as well as facilitated linkage to post-test services.

In 2014, 2,364 HIV tests were administered to FSW through LVCT Health, and 110 women were diagnosed HIV-positive. Between 2011 and 2012, LVCT collected qualitative and quantitative data around client attrition. Primary reasons for disengaging in care included lack of peer support, stigma and discrimination, and forgetfulness. An adherence and retention model was implemented in response to these findings. This includes active follow-up of clients conducted by peer educators to create and maintain demand for services. Follow-up is also conducted through an electronic Short Message System (SMS) reminder tool and through telephone calls. Peer educators also follow up with clients once per month for visit reminders, adherence support, education and other activities.

4.3.4 The Sauti Program, Tanzania

Sauti is a 5-year, PEPFAR-funded program operating in 11 regions of Tanzania, with 30 mobile testing units and 25 drop-in centers (www.jhpiego.org/success-story/sauti-takes-on-tanzanias-fight-for-an-aids-free-generation). This project went into the field in late 2015, offering HIV testing and a range of other health services to sex workers, as well as MSM and vulnerable adolescent girls. In addition to providing dedicated FSW services, the program
also brings in government providers to train them in how to provide services to FSW, by giving them exposure and providing mentoring in Sauti sex worker clinics. Services include HIV testing and a broad range of other clinical services, outreach, curriculum-based activities, gender-based violence support groups, savings and loan groups, and legal assistance.

### 4.4 Self-Testing Among Sex Workers

#### 4.4.1 Acceptability and Feasibility of HIV Self-Testing among Sex Workers in Zimbabwe

A pilot study is ongoing in Zimbabwe where, as the first aim, accuracy of HIV self-testing (HIVST) was measured through supervised self-testing (PI Sue Napierala Mavedzenge). This aim demonstrated very high accuracy (sensitivity 100%, specificity 97%—one unsure/invalid result) using instructions adapted for Zimbabwe. For the second aim, FSW of unknown HIV status who come to a dedicated FSW clinic for HIV testing are being offered HIVST during a 6-month period to evaluate acceptability and feasibility, and to look at linkage to post-test services. A total of 77 FSW were enrolled in the first 2 months, with 9% being first-time testers. Of these, 39% tested positive for HIV; and of those, 97% attended post-test services. Among all the FSW in the study, 100% indicated they would want self-testing to be available to them.

#### 4.4.2 Self-Testing in Africa (STAR)

Zimbabwe, Malawi and Zambia are sites of the UNITAID-funded Self-Testing in Africa (STAR) program (Figure 4-3; STAR consortium led by PSI). This initiative is conducting research and social marketing to develop, deliver, evaluate and optimize HIVST, and then rapidly scale up self-testing in these countries. The overall aims are to normalize HIVST, stimulate and guide investment in product development, and provide impetus and technical support for market readiness. As part of the STAR program in Zimbabwe and Malawi, where extensive formative self-testing work has already been conducted, FSW will be targeted for self-testing. In Zimbabwe, self-test kits will be made available through the Sisters program sites for on-site or home use. Formative work will be conducted to develop distribution methods and their evaluation by peer educators—including with male sex workers through sex worker associations. Pilot community distribution will be conducted through 10 peer educators. If effective in increasing testing uptake and linkage to Sisters services and HIV care—without adverse consequences—the community distribution will be scaled up to peer educators more generally. This program may also be linked to the DREAMS initiative for young women who sell sex in Zimbabwe (see above). They will also explore the possibility of sex workers providing self-test kits to their clients, in order to reach the highest risk men.
In Malawi, more formative work around provision of self-testing to FSW is planned. Here they will use rapid ethnographic assessment, participatory workshops, and FGDs to examine the HIV prevention, testing, and care needs of FSWs (and MSM) and the extent to which these needs are currently being met by service providers. They will also assess the acceptability and feasibility of using peer educators for HIVST distribution among FSWs (and MSM).

### 4.4.3 3IE-Funded Self-Testing Research

Another HIVST study among FSW is ongoing in Zambia. This research, being undertaken by JSI and funded by 3IE, aims to determine which HIVST distribution model will achieve better HIV testing and linkage to care. Using a cluster randomized controlled design, three study arms will be evaluated: FSW offered HIVST by a peer, FSW referred to clinic-based HIV testing, or FSW referred to an HIVST distribution site.
In further 3IE research in Kenya, 100 FSW (and 100 MSM) were surveyed—using convenience sampling at clinics and drop-in centers in Mombasa—to explore potential users and messaging for oral HIVST. Nearly all of the respondents (96%) had ever tested for HIV, 88% reported testing within the previous 12 months, and 78% reported testing within the past 6 months. Only 8% had seen or heard about HIV oral self-test kits. None of those respondents reported ever having used self-testing; however, all respondents said they would self-test if it were available. Reasons for interest in self-testing included ease of use (52%), convenience (32%), guaranteed privacy (70%), and not having to visit a health facility (22%). Nearly all respondents (95%) indicated that they would prefer to get the kit and perform the test on their own; and 75% stated that they would go to a health facility or VCT for confirmation. A majority (75%) of respondents preferred to obtain the kits from private chemists/pharmacies, followed by government facilities (53%) and supermarkets/shops (13%).

### 4.4.4 Key Populations Implementation Science Initiative: Optimize Continuum of Care for Female Sex Workers

In Kenya, the CDC is funding an implementation science initiative to establish the baseline of HIV cascade outcomes for FSW, and to evaluate service delivery changes on HIV continuum of care outcomes. One aspect of the initiative includes a quasi-experimental crossover study of whether oral self-tests increase women getting tested and coming to the drop-in centers for care and treatment. Over a 6-month period, oral self-tests will be given out in two communities to FSW who have not tested in the past year, and the other communities will receive regular outreach. After a 6-month wash-out period, the investigators flip the intervention in the communities. The second component of the study will include a randomized controlled trial of whether peer educators assigned to a higher versus lower number of sex workers influences testing and linkage to care. This study will also include in-depth interviews (IDIs) and focus group discussions (FGDs) with providers and clients as well as a cost analysis for both intervention strategies.

### 4.4.5 ‘Secondary Distribution’ of Self-Tests by Female Sex Workers

A study in Kenya distributed multiple self-test kits to FSW to distribute to their social networks, including their male sex partners. This research is described in more detail in the chapter on men. Notably, however, FSW were eager to use self-tests to test both themselves and their male sex partners.

### 4.5 Sex Worker Population Size Estimates

A CDC-funded study in Zimbabwe is seeking to conduct population size estimates of FSW in several cities in Zimbabwe. Embedded within this study is research to train government healthcare workers to provide sex worker-friendly services within government clinics. Training of government providers will be with the support of Sisters program staff. FSW who
participate in the size estimation study and who receive HIV testing services will be followed longitudinally to document their post-test linkage and engagement in these sex worker-friendly government clinics.

**4.6 Linkages Across the Continuum of HIV Services for Key Populations Affected by HIV (LINKAGES)**

LINKAGES is an FHI 360 project initiated in 2014 and funded by USAID (www.fhi360.org/projects/linkages-across-continuum-hiv-services-key-populations-affected-hiv-linkages). The project aims to conduct a range of activities to reduce HIV transmission among key populations—including sex workers, MSM, transgender persons, and PWID—and to improve their enrollment and retention in care. This project is being undertaken in 25 countries, including Malawi and Kenya. Key program approaches include identifying key populations and locales and comprehensively assessing risk, diagnosing “leaks” and revealing access barriers within the HIV services cascade, scaling up “what works,” and addressing structural barriers.

**4.7 Discussion**

Our review of the literature identified a moderate body of published research around HTS among FSW. The majority of the published literature was conducted in Kenya, although we identified research from all focal countries, with the exception of Zambia (Table 4-1). Across studies, a very high proportion of FSW had ever tested for HIV, with most research indicating 80% to 90% or more having ever tested. However, data on recent and regular testing were limited, which represents a gap in the literature. When measured, knowledge of HIV status among those HIV-infected was suboptimal, and well below the 90% goal set out by UNAIDS. This implies inadequate uptake of routine HIV testing and/or high HIV incidence, with both of these likely to be contributors in most settings. Annual HIV testing among the general population is necessary to ensure universal access to HIV prevention, treatment, and care in countries with generalized epidemics, with more frequent testing (every 3 to 6 months) required for high-risk populations such as FSW.

The barriers and facilitators to HTS for FSW are summarized in Figures 4-4 and 4-5. What emerged from the literature as the primary barrier to HIV testing for FSW was stigma (either real or perceived). This was cited by both FSW and by providers who serve them. Discrimination, mistreatment, and even denial of services was cited in numerous studies across settings and countries, implying a level of generalizability of this barrier, which is similarly cited among other hard-to-reach populations. Being a sex worker was cited as a reason for stigma; however, none of the studies explored what, if any, stigma was associated with actual or assumed HIV status, or how important HIV-related stigma was as compared with sex worker-related stigma. Disentangling the source and types of stigma is an important first step to addressing this formidable barrier in this population. These data emphasize the need to craft appropriate service delivery models that are responsive to
Figure 4-4. Barriers to Testing and Linkage: Female Sex Workers

Figure 4-5. Facilitators to Testing and Linkage: Female Sex Workers
criminalization, traditional, and religious values, all of which create intense stigma and discrimination. Lack of confidentiality was another important barrier cited. Other barriers included logistics, in the form of transportation or opportunity costs, alcohol use, and age.

One facilitator to testing that emerged was parity. Women who had children were more likely to have ever tested for HIV. This is a facilitator for women in general, associated with the successful scale-up of antenatal testing programs. Data were lacking around facilitators and barriers to linkage to post-test services, and this represents an important research gap. One study conducted within the Sisters clinics indicated that linkage to post-test HIV care was poor, and this was caused by the stigma and discrimination that FSW faced upon referral to government ART clinics. This implies that comprehensive HIV testing, care, and treatment services in a single FSW-friendly location may address this barrier and facilitate linkage to post-test services.

Strategies to address barriers to testing for FSW have largely involved providing targeted and dedicated services, in a nondiscriminatory environment. Additionally, providing services at times and locations more convenient for sex workers was a common strategy, such as extended or “moonlight” hours, and community-based testing at locations where FSW congregate. In all research presented, a denominator is lacking to know the size of the population being served and therefore the proportion of the population being reached. However, data generally suggest that uptake of testing is high, or improves using these strategies. Interventions identified in this review for the most part address increasing uptake of testing, with linkage to post-test services still largely through referral to government or other services. Again, this is a gap that will require additional research.

Research suggests there is potential for improving testing and linkage through cross-agency collaboration, involving key stakeholders in intervention design—including FSW themselves—and providing combination health services, where testing, prevention, care and treatment services can be accessed at one location. Providing additional health services (e.g., cervical cancer screening, tuberculosis screening, and family planning services) as well as potentially other services (e.g., gender-based violence, paralegal, education, or training opportunities) may also improve engagement and uptake of testing and linkage. This strategy both reduces stigma around HIV services and promotes clinic engagement by offering a wider range of services.

From our key informant interviews, we have identified in several countries the implementation of multisite and national combination sex worker programs. These programs largely address stigma through provision of dedicated FSW services, and attempt to engage FSW in testing and linkage through provision of a range of services, community outreach and mobilization activities, and often times the use of peer educators. One of the largest and longest running of these is the Sisters program, which is Zimbabwe’s National Sex Worker Program. This program has seen tremendous growth and success in increasing
testing behavior. The SAPPH-IRe trial, embedded within the Sisters program, seeks to improve on the program by using a number of different approaches, including POC CD4 count testing and on-site provision of ART to facilitate linkage. The results of this trial will provide important process and biological data to guide optimal programming for sex workers, which may be generalizable to other settings. Tanzania’s Sauti program, which has recently begun, and the long-running LVCT Health program, will likewise provide important information on FSW programming as it relates to testing and linkage. Sauti, along with the size estimation study in Zimbabwe, will be particularly interesting in terms of if and how FSW programming can be successfully transferred into government clinics, which may be a more sustainable approach in the long term.

Though our literature review did not find any completed research on HIVST among sex workers, our key informant interviews found a number of studies underway. This is a strategy that may be particularly appropriate for FSW, given their typically high knowledge about HIV and need for frequent testing. Thus far, there has been universally high interest in HIVST from FSW from a range of settings, implying generalizability. Data from Zimbabwe indicate that very high accuracy can be achieved. No data are yet available on linkage to post-test services, or on potential adverse events. These are important outcomes, which some of the ongoing research is evaluating. Ongoing research will look at optimal distribution strategies, which will be important for addressing expressed barriers around the logistics of access to HTS. Though there are currently few data to draw on, this strategy holds a lot of promise, particularly as it addresses some of the key barriers to testing and linkage that have been identified in the published literature, including those around stigma, loss of confidentiality, and potentially logistical barriers to testing.

4.8 Recommendations
Based on the findings for FSW, the following recommendations can be made:

- Develop and expand programs to combat stigma, which was the primary barrier to HTS identified in this review.

- Develop HTS programming in consultation with the FSW who will be served by these programs, as well as with other key stakeholders.

- Scale up provision of combination services, including HIV testing and treatment on-site rather than referral to post-test services. Combination services, where a range of health and other services are available, offer increased convenience, reduce time and transportation costs, provide additional impetus to visit the clinic, and reduce stigma associated with HIV service provision.

- Scale up community-based and other outreach testing programs, particularly those that accommodate locations and times that are convenient for FSW, such as moonlight outreach programs.

- Scale up dedicated sex worker services, which are provided by healthcare workers trained to address the specific needs of FSW. Acknowledging that this may not
always be feasible, further research is needed to determine if and how government and other public clinics can become more sex worker friendly.

- Conduct further research on HIVST among FSW; in particular, optimal distribution models, innovative ways to facilitate linkage to post-test services, accuracy in other settings outside Zimbabwe, monitoring of adverse events, and impact and cost-effectiveness evaluations of HIV self-testing programs for sex workers.

- Conduct further research to identify facilitators and barriers to linkage to post-test services.

- Conduct further research to determine strategies to increase linkage to post-test services.

- Evaluate the cost-effectiveness of HTS strategies that have proven success.
5. MEN WHO HAVE SEX WITH MEN

5.1 Literature Review

The literature search identified 274 citations (including 47 discarded as duplicates). Title and abstract review excluded 170 citations and full-text review excluded 25 citations. A total of 32 peer-reviewed citations met the inclusion criteria. An additional 12 citations were identified in the gray literature, including 8 conference abstracts and 5 publications by funding agencies (Figure 5-1). Fifteen studies were conducted in Kenya, 15 in South Africa, 5 in Malawi, 4 in Tanzania, 2 in Zambia, and 1 in Zimbabwe. Literature sources included in this review are described in Appendix E, Table E-2. A summary of key information and quality assessment criteria is in Table 5-1.

5.2 Primary Barriers to HIV Testing Services for Men Who have Sex with Men Identified in the Literature

The literature on men who have sex with men (MSM) reflected concern that in many African settings MSM are a stigmatized group whose access to and engagement in HTS often poses challenges from both the care-seeking perspective of the individual and the care-provision perspective of health care workers (HCW).

5.2.1 Studies 1-19: MSM Care-Seeking Perspective

A systematic review through 2015 found consensus on the existence of broad societal homophobia across Sub-Saharan Africa.152 The resulting criminalization, stigma, and discrimination deter MSM from accessing HIV services and HIV prevention and care information.153 Among a sample of MSM in Malawi (n=338), the prevalence of perceived and experienced stigma exceeded 20%154 and another study found strong associations between experiences of discrimination and fear of seeking healthcare services among MSM in multiple African countries.155 MSM in another study reported fears of disclosing sexual activity to their healthcare providers.156 In 2012/2013, 15 LGBT organizations from Botswana, Namibia, South Africa, Lesotho, Swaziland, Mozambique, Zimbabwe, Zambia and Malawi participated in a health needs assessment study, reaching over 2,500 LGBT people in 27 locations via qualitative and quantitative research. They found that MSM demonstrated delayed health-seeking behavior because of real or perceived negative attitudes of HCW, fear of being reported to authorities, and limited confidentiality expected or experienced.157 Among MSM sex workers in five regions of Kenya, all 80 participants in a qualitative study reported intense stigma and discrimination from public healthcare providers and family members resulting in avoidance of seeking general as well as HIV-specific care.158
Figure 5-1. Flow Diagram of Study Selection Process

Men Who Have Sex With Men

Search results (n=272)*
Pubmed (n=211), Popline (n=16)
*After removal of duplicates

57
full text articles retrieved for evaluation

25 articles excluded for the following reasons:*
- Time period (n=0)
- Geographical area of implementation (n=4)
- Target population (n=2)
- Main focus (n=19)
- Evaluation design (n=0)
- Evaluation outcomes (n=0)
- Quality of article and evaluation (n=0)
*Articles may be excluded for more than one reason – first reason for exclusion only noted here

32
articles remaining

Review of gray literature
(n=12)

44
articles included in review
### Table 5-1. Summary Table of Study Inclusion and Quality for Men Who Have Sex With Men (MSM)

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author</th>
<th>Country Overview</th>
<th>Study Type</th>
<th>Barrier (B), Facilitator (F), or Intervention (I)</th>
<th>Main Outcome(s) Related to this Review</th>
<th>Quality Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dijkstra, 2015</td>
<td>Sub-Saharan Africa, Kenya focus</td>
<td>Systematic literature review</td>
<td>B, F, I</td>
<td>HCW training program</td>
<td>systematic review of MSM studies conducted in sub-Saharan Africa in 2011–2014</td>
</tr>
<tr>
<td>2</td>
<td>Mbote, 2014</td>
<td>Kenya</td>
<td>Policy analysis</td>
<td>B, F</td>
<td>Care access for Sex workers, MSM, prison populations, PWID</td>
<td>analyzed 120 policy and program documents, 3 stakeholder meetings</td>
</tr>
<tr>
<td>3</td>
<td>Wirtz, 2013</td>
<td>Malawi</td>
<td>Quantitative</td>
<td>B</td>
<td>Prevalence of perceived and experienced stigma</td>
<td>cross sectional survey; medium sample size (338 MSM)</td>
</tr>
<tr>
<td>4</td>
<td>Fay, 2011</td>
<td>Malawi, Namibia, and Botswana</td>
<td>Quantitative</td>
<td>B</td>
<td>HIV testing services</td>
<td>cross-sectional survey, HIV screening using oral fluid test; large sample size across multiple countries (537 MSM)</td>
</tr>
<tr>
<td>5</td>
<td>Wirtz, 2014</td>
<td>Malawi</td>
<td>Quantitative</td>
<td>B, F</td>
<td>Health seeking practices for MSM</td>
<td>8 MSM, 5 service providers in-depth interviews</td>
</tr>
<tr>
<td>6</td>
<td>Langen, 2014</td>
<td>Botswana, Namibia, South Africa, Lesotho, Swaziland, Mozambique, Zimbabwe, Zambia, Malawi</td>
<td>Quantitative, Qualitative</td>
<td>B</td>
<td>MSM care uptake and HCP attitudes</td>
<td>compilation of cross-organization quantitative and qualitative survey, focus group discussion and key informant interview data (15 LGBT organisations and their outreach to over 2,500 LGBT people in 27 locations)</td>
</tr>
<tr>
<td>7</td>
<td>Macharia, 2014</td>
<td>Kenya</td>
<td>Qualitative</td>
<td>B</td>
<td>Barriers to HIV related care and treatment</td>
<td>in-depth interviews (80 MSM)</td>
</tr>
<tr>
<td>8</td>
<td>Harper, 2015</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>F</td>
<td>HIV testing uptake</td>
<td>cross sectional survey; medium sample size (511 MSM)</td>
</tr>
<tr>
<td>9</td>
<td>Knox, 2011</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>B, F</td>
<td>Having ever tested for HIV</td>
<td>cross sectional survey; small sample size (300 MSM)</td>
</tr>
<tr>
<td>10</td>
<td>Nel, 2013</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>B</td>
<td>Fear of being tested for HIV</td>
<td>cross sectional survey; large sample size (1045 MSM)</td>
</tr>
<tr>
<td>11</td>
<td>Nyoni, 2012</td>
<td>Tanzania</td>
<td>Quantitative</td>
<td>B, F</td>
<td>Self-reported reasons for not testing</td>
<td>cross sectional survey; small sample size (271 MSM)</td>
</tr>
<tr>
<td>12</td>
<td>Okall, 2014</td>
<td>Kenya</td>
<td>Quantitative, Qualitative</td>
<td>B, F</td>
<td>Having discomfort when seeking health services</td>
<td>two-phase formative study with individual interviews (15 MSM) and a structured survey (51 MSM)</td>
</tr>
</tbody>
</table>

(continued)
Table 5-1. Summary Table of Study Inclusion and Quality for Men Who Have Sex With Men (MSM) (continued)

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author</th>
<th>Country</th>
<th>Study Type</th>
<th>Barrier (B), Facilitator (F), or Intervention (I)</th>
<th>Main Outcome(s) Related to this Review</th>
<th>Quality Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Stephenson, 2014</td>
<td>USA, Canada, Australia, UK, South Africa, Thailand, and Brazil</td>
<td>Quantitative</td>
<td>B, F</td>
<td>Willingness to use CVCT</td>
<td>cross sectional survey; large, multicountry sample (3245 MSM)</td>
</tr>
<tr>
<td>14</td>
<td>Sandfort, 2015</td>
<td>South Africa</td>
<td>Qualitative</td>
<td>B, F</td>
<td>Experience accessing testing services</td>
<td>in-depth interviews (80 MSM)</td>
</tr>
<tr>
<td>15</td>
<td>Geibel, 2012</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>I</td>
<td>Peer-educator training and outreach (40 educators trained)</td>
<td>quasi-experimental (control location without intervention) (baseline: 425; post-intervention: 442)</td>
</tr>
<tr>
<td>16</td>
<td>Wagenaar, 2012</td>
<td>USA, South Africa</td>
<td>Quantitative</td>
<td>B</td>
<td>HIV knowledge</td>
<td>cross sectional survey; large, multicountry sample (USA: 1154, South Africa: 439 MSM)</td>
</tr>
<tr>
<td>17</td>
<td>van Rooyen, 2015</td>
<td>Kenya, Malawi, South Africa</td>
<td>Qualitative</td>
<td>B, F</td>
<td>HIV testing strategy and policy opinions</td>
<td>key informant interviews; first part of a two-phase study (54 key informants)</td>
</tr>
<tr>
<td>18</td>
<td>Johnston, 2010</td>
<td>Tanzania</td>
<td>Quantitative</td>
<td>B</td>
<td>Having ever tested for HIV</td>
<td>cross-sectional, face-to-face survey-interviews and HIV testing (509 MSM IDU)</td>
</tr>
<tr>
<td>19</td>
<td>Tun, 2012</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>B</td>
<td>HIV-related conspiracy beliefs and its relationships with HIV testing</td>
<td>cross sectional survey; small sample size (324 MSM)</td>
</tr>
<tr>
<td>20</td>
<td>Obermeyer, 2013</td>
<td>Burkina Faso, Kenya, Malawi, and Uganda</td>
<td>Literature review</td>
<td>B</td>
<td>HIV testing &quot;ethics on the ground&quot;</td>
<td>nonsystematic search of HIV testing published and gray literature</td>
</tr>
<tr>
<td>21</td>
<td>Muzyamba, 2015</td>
<td>Zambia</td>
<td>Qualitative</td>
<td>B, F</td>
<td>Human rights program strategies to address complex drivers of the HIV epidemic</td>
<td>FGDs (23 women, youth, and MSM); IDIs (10 employees)</td>
</tr>
<tr>
<td>22</td>
<td>Sanders, 2011</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>B, F</td>
<td>Acute HIV-1 infection health seeking/testing behavior/operations</td>
<td>MSM (60) and women who reported transactional sex work (12) and seroconverted during cohort</td>
</tr>
<tr>
<td>23</td>
<td>Taegtmeyer, 2013</td>
<td>Kenya</td>
<td>Qualitative</td>
<td>B, F</td>
<td>Health care worker stigma, comfort with MSM</td>
<td>In-depth interviews, (13 counsellors, 3 clinicians)</td>
</tr>
<tr>
<td>24</td>
<td>van der Elst, 2013</td>
<td>Kenya</td>
<td>Qualitative</td>
<td>I</td>
<td>Health care provider training related to MSM</td>
<td>Focus group discussions pre-/post-training program (22 clinicians, 43 nurses and counselors, and 9 administrators/managers)</td>
</tr>
<tr>
<td>25</td>
<td>van der Elst, 2013</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>I</td>
<td>Health care worker training on HIV and MSM</td>
<td>Precourse assessment, immediate postcourse assessment, and 3-month-postcourse assessment (22 clinicians, 43 nurses and counselors, and 9 administrators/managers)</td>
</tr>
</tbody>
</table>

(continued)
### Table 5-1. Summary Table of Study Inclusion and Quality for Men Who Have Sex With Men (MSM) (continued)

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author</th>
<th>Country</th>
<th>Study Type</th>
<th>Barrier (B), Facilitator (F), or Intervention (I)</th>
<th>Main Outcome(s) Related to this Review</th>
<th>Quality Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>Siegler, 2015</td>
<td>South Africa</td>
<td>Qualitative</td>
<td>F</td>
<td>Reasons for seeking HIV testing</td>
<td>Activity-based in-depth interviews that included a timeline element (34 MSM)</td>
</tr>
<tr>
<td>27</td>
<td>Osmand, 2014</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>B, F</td>
<td>Boithato HIV prevention intervention for South African MSM, baseline survey results</td>
<td>Cross-sectional baseline survey and HIV testing in intervention and comparison communities (307 MSM in Gert Sibande; 298 MSM in Ehlanezini)</td>
</tr>
<tr>
<td>28</td>
<td>Batist, 2013</td>
<td>South Africa</td>
<td>Qualitative</td>
<td>F, I</td>
<td>Six-month pilot program trained 5 community leaders who, along with staff, provided HIV-prevention information and supplies to MSM</td>
<td>Prospective cohort (98 MSM in intervention, 36 in FGD, 5 in KII)</td>
</tr>
<tr>
<td>29</td>
<td>Wirtz, 2015</td>
<td>Malawi</td>
<td>Quantitative</td>
<td>I</td>
<td>CHPI community-based intervention to mitigate barriers to HIV prevention</td>
<td>Prospective cohort; participants (103 MSM) completed sociobehavioral surveys and HIV testing at each of the 3 follow-up study visits.</td>
</tr>
<tr>
<td>30</td>
<td>Lane, 2012</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>I</td>
<td>Boithato HIV prevention intervention for South African MSM, baseline results</td>
<td>Cross-sectional baseline survey and HIV testing in intervention and comparison communities (307 MSM in Gert Sibande; 298 MSM in Ehlanezini)</td>
</tr>
<tr>
<td>31</td>
<td>Lane, 2015</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>I</td>
<td>Boithato HIV prevention intervention for South African MSM, 12-month impact evaluation results</td>
<td>Pre-/post- survey and HIV testing in intervention and comparison communities (307 MSM in Gert Sibande; 298 MSM in Ehlanezini)</td>
</tr>
<tr>
<td>32</td>
<td>Anthony, 2014</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>I, F</td>
<td>Technical support unit intervention for ministry of health HIV prevention programs</td>
<td>Evaluation of national surveillance efforts (29 counties in 80 partner locations)</td>
</tr>
<tr>
<td>33</td>
<td>Singh, 2012</td>
<td>Kenya</td>
<td>Quantitative, Qualitative</td>
<td>I</td>
<td>VCT uptake</td>
<td>Cross-sectional survey, interviews, and HIV testing (262 MSM)</td>
</tr>
<tr>
<td>34</td>
<td>Stephenson, 2012</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>B, F</td>
<td>Willingness to use CVCT</td>
<td>Cross-sectional, online survey (486 MSM)</td>
</tr>
<tr>
<td>35</td>
<td>Stephenson, 2013</td>
<td>South Africa</td>
<td>Qualitative</td>
<td>F</td>
<td>Willingness to use CVCT</td>
<td>Seven focus group discussions (42 MSM) and in-depth interviews (29 MSM)</td>
</tr>
</tbody>
</table>
| 36           | Wahome, 2013    | Kenya       | Quantitative| I                                                 | Detection of AEHI                                                                                      | Quasi-experimental prospective cohort; characteristics reported at 73 acute visits compared with characteristics reported at 6458 scheduled cohort visits | (continued)
Table 5-1. Summary Table of Study Inclusion and Quality for Men Who Have Sex With Men (MSM) (continued)

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author</th>
<th>Country</th>
<th>Study Type</th>
<th>Barrier (B), Facilitator (F), or Intervention (I)</th>
<th>Main Outcome(s) Related to this Review</th>
<th>Quality Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>van der Elst, 2015</td>
<td>Kenya</td>
<td>Qualitative</td>
<td>I</td>
<td>Effectiveness of healthcare provider online training program</td>
<td>10 focus group discussions to explore the provision of MSM healthcare services 2 years post-training (63 HCPs)</td>
</tr>
<tr>
<td>38</td>
<td>WHO, UNAIDS, 2014</td>
<td>Nonspecific</td>
<td>NA—guidance document</td>
<td>B, F</td>
<td>Guidance on HIV self-testing</td>
<td>N/A</td>
</tr>
<tr>
<td>39</td>
<td>WHO, 2011</td>
<td>Focused on low- and middle-income countries</td>
<td>NA—guidance document</td>
<td>B, F</td>
<td>Guidance on prevention and treatment of HIV and other STIs among MSM and transgender people</td>
<td>N/A</td>
</tr>
<tr>
<td>40</td>
<td>WHO, 2015</td>
<td>Nonspecific</td>
<td>NA—guidance document</td>
<td>F</td>
<td>Guidance on HIV testing services</td>
<td>N/A</td>
</tr>
<tr>
<td>41</td>
<td>WHO, 2015</td>
<td>Nonspecific</td>
<td>NA—guidance document</td>
<td>B, F</td>
<td>Guidance on how to provide health services, programmes and support for young MSM</td>
<td>N/A</td>
</tr>
<tr>
<td>42</td>
<td>UNFPA, MSMGF, UNDP, WHO, USAID, World Bank, 2015</td>
<td>Nonspecific</td>
<td>NA—guidance document</td>
<td>F</td>
<td>Guidance on implementing HIV and sexually transmitted infection (STI) programmes with MSM</td>
<td>N/A</td>
</tr>
<tr>
<td>43</td>
<td>Mlawa</td>
<td>Tanzania</td>
<td>Qualitative</td>
<td>B, F</td>
<td>MSM preferences regarding healthcare services</td>
<td>FSW and MSM participated in one-day consultation meetings (participant number unspecified)</td>
</tr>
<tr>
<td>44</td>
<td>Tindwa, 2015</td>
<td>Tanzania</td>
<td>Qualitative</td>
<td>B, F</td>
<td>MSM parent discussions of sexual orientation, gender identity, and support</td>
<td>7 meetings where parents of MSM and other family members were invited to take part in presentations and discussions (participant number unspecified)</td>
</tr>
</tbody>
</table>

Note: AHI = acute HIV-1 infection; AEHI = acute and early HIV-1 infection; aOR = adjusted odds ratio; ART = antiretroviral therapy; CBO = community-based organization; CHPI = combination HIV prevention intervention; CI = confidence interval; CVCT = couples voluntary counseling and testing; FGD = focus group discussion, FSW = female sex worker; GBMSM = gay, bisexual, and other men who have sex with men; HCW = health care worker; HCP = health care professional; HCT = HIV counselling and testing; HIV = human immunodeficiency virus; HTS = HIV testing services; IDI = in-depth interview; IDU = injection drug user, LGB = lesbian, gay, bisexual; LGBT = lesbian, gay, bisexual, and transgender; MSM = men who have sex with men; MSMGF = Men Who Have Sex With Men Global Forum; MSW = male sex workers/men who have sex with women; NA = not available; NASCOP = National AIDS & STI Control Programme; NGO = non-governmental organization; PWID = people who inject drugs; RDS = respondent-driven sampling; SOGI = Sexual Orientation and Gender Identity; STI = sexually transmitted infection, UAI = unprotected anal intercourse; UN = United Nations; UMRSS = University of North Carolina-Malawi Risk Screening Score; UNDP = United Nations Development Programme; UNFPA = United Nations Population Fund; UNAIDS = Joint United Nations Programme on HIV/AIDS; USAID = United States Agency for International Development; VCT = Voluntary Counseling and Testing; WHO = World Health Organization; WSW = women who have sex with women
We identified multiple studies documenting socially vulnerable situations of MSM being associated with lower odds of or fear of testing\(^{159-161}\). Being black and living in a township (adjusted odds ratio [aOR]=0.29, 95% confidence interval [CI]: 0.15–0.57), having lower income (aOR=0.33, 95% CI: 0.12–0.87), having internalized homophobia (aOR=0.63, 95% CI: 0.43–0.94), and being MSM while not self-identifying as gay (aOR=0.21, 95% CI: 0.11–0.84) all corresponded with lower likelihood of ever testing or of repeat testing.\(^{160}\)

Furthermore, every unit increase in loneliness was associated with a 0.03 unit decrease in HIV testing (p=0.002) and every unit increase in lesbian, gay, bisexual (LGB) identity uncertainty was associated with a 0.04 unit decrease in HIV testing (p=0.001).\(^{159}\) Fear of being tested for HIV was associated with being black, coloured or Indian (aOR=2.90, 95% CI: 1.43–5.88), preferred gender expression as feminine (aOR=4.07, 95% CI: 1.55–10.69), being sexually active (aOR=4.62, 95% CI: 2.29–9.31), a history of STIs (aOR=5.05, 95% CI: 1.59–16.10), and experience of victimization on the basis of sexual orientation (aOR=2.34, 95% CI: 1.25–4.34).\(^{161}\) A study examining reasons for not agreeing to HIV testing found that 7% of MSM described shame and 15% of MSM reported discrimination as barriers to accessing HIV testing services.\(^{162}\)

Reported discomfort in seeking services also resulted from stigma from those within the community who may observe one’s health-seeking behaviors. Nearly two-thirds of MSM in Kisumu, Kenya, reported having some discomfort when seeking health services at a public hospital.\(^{163}\) Findings from the same study found the only factor significantly associated with discomfort seeking health services was feeling people were staring at them (OR=9.23; 95% CI: 1.73–95.45).\(^{163}\) Furthermore, not all stigma influencing testing services was external. MSM in South Africa who reported more internalized homophobia were less likely to have tested within the past year (aOR=0.63, 95% CI: 0.43–0.94)\(^{160}\) or report willingness to use CVCT (OR: 0.9; 95% CI: 0.9–0.9).\(^{164}\)

In addition to fear of discrimination, other types of fear that affect the use of HIV testing services were common themes within the literature on MSM service access. In one study, nearly one-third of respondents (28%) replied that their reason for not testing was fear of the test result.\(^{162}\) In another qualitative study, men expressed a high level of discomfort with testing and of repeat testing, because testing was reportedly most common after engaging in risky behavior or once someone was clearly ill and presumed to be HIV positive.\(^{165}\)

Another theme, though less commonly reported, related to the lack of access to information on HIV and testing services.\(^{156,160,166,167}\) One study identified low literacy levels as a key issue in HIV information access\(^{168}\) and other studies voiced concerns that MSM generally, and MSM IDU and sex workers specifically, had low levels of HIV knowledge.\(^{166,167,169}\) One study directly associated low HIV knowledge, measured using 15 items from previously validated instruments, with decreased odds of testing for HIV (aOR=0.90, 95% CI: 0.80–1.00).\(^{160}\) In a qualitative study, researchers reported that some MSM participants
demonstrated awareness of HIV risk, but believed that within the wider MSM community there was a general lack of HIV information for MSM, low awareness of appropriate prevention, and low perception of risks related to HIV infection.\textsuperscript{156}

Low levels of education in general, and regarding HIV in particular, contribute to beliefs that delay access to HTS. In one study, the primary reason reported for not testing was looking healthy (65\%).\textsuperscript{162} One study examined HIV-related conspiracy beliefs and their relationship with HIV testing among MSM in Tshwane (Pretoria), South Africa. This research found that endorsing conspiracy beliefs was common among the study population (23\%) and was significantly associated with never having been tested for HIV (aOR: 2.4; 95\% CI: 1.1–5.7); reflecting a mistrust in government institutions and systems that could be an important impediment to seeking a variety of HIV-related services.\textsuperscript{170} However, it is noteworthy that higher education did not always correspond to increased willingness to use testing services. In one study, MSM who reported higher completed school years were less likely to report willingness to use couples voluntary counseling and testing (CVCT).\textsuperscript{164}

\textbf{5.2.2 Studies 2, 5, 20-22, 24-25: Men Who Have Sex with Men Care-Provision Perspective}

Less research examines the care-providing perspective, although the available data highlight notable care provision barriers to effective HTS for MSM at the structural and provider levels. At the structural level, HIV policies and programming in Sub-Saharan Africa have historically focused almost exclusively on heterosexual transmission, with a corresponding neglect of research, surveillance, prevention, treatment, and care for MSM.\textsuperscript{171} One report highlighted how Kenya’s policies do not identify mechanisms to involve MSM (among other key risk groups) in the development of HTC protocols or in monitoring and evaluation of HTC.\textsuperscript{153} Of those organizations aiming to tailor interventions to MSM, some have also expressed concerns that they struggle to tailor them to country-specific contexts while also matching donor stipulations.\textsuperscript{172}

Notably, in terms of structure of care provision, a key issue identified was that although patients presented at clinical locations for febrile illness, a symptom of acute HIV infection, they were often presumptively treated for malaria instead of undergoing any testing for HIV during this key period when the patient may be most contagious.\textsuperscript{173,174} A prospective open cohort study of 60 MSM and 12 women in Kenya found that prior to HIV diagnosis, 75\% of patients reported fever and 69\% sought urgent care for symptomatic illness.\textsuperscript{173} Among these patients, 40\% received presumptive malaria treatment. Acute HIV-1 infection was only suspected in 12\% of patients who presented for urgent care.

Criminalization perpetuates stigma and discrimination against MSM;\textsuperscript{153} and because of this, service providers report concerns of adverse repercussions related to the provision of services to men in same-sex sexual relationships.\textsuperscript{156} During IDIs in Kenya providers reported personal and social prejudices as barriers to serving MSM clients, discomfort with
treating MSM, frustration with the complexity of some of their clients’ issues, and that they lacked sufficient training on how best to treat this population.175-177

5.3 Facilitators to HIV Testing Services for Men Who Have Sex with Men Identified in the Literature

5.3.1 Studies 8, 11, 14, 26, 27: Men Who Have Sex with Men Care-Seeking Perspective

The literature reports a number of factors that facilitate MSM testing or willingness to test for HIV. A study in Tanzania found that testing increased with age (p<0.001) and educational level (p=0.002), and the belief that it is important to be HIV tested in spite of looking healthy (p=0.004).162 In a study conducted in Kenya among gay, bisexual, and other MSM, every unit increase in LGBT identity superiority was associated with a 0.03 unit increase in HIV testing (p=0.036).159 In qualitative work on MSM testing access in South Africa, men mentioned several reasons why and when they would get tested, and why they do or would test frequently.165 While most men who tested did so of their own initiative, a few tested because of advice and support from others, including their partners and mothers. Similarly, another qualitative study conducted in South Africa found that for MSM who reported repeat testing at more timely intervals, the most common rationale was seeking test results with a sex partner to allow for “safe sex” without condoms (13/34 participants). Testing with a partner commonly involved separate HIV test seeking followed by mutual disclosure of test results. Repeat testing was also common for those noticing perceived physiological symptoms (10/34 participants) and those with worries after sex with a partner known to be HIV positive (4/34 participants) or of unknown HIV status (8/34 participants).

The reasons for a first HIV test were frequently one-time occurrences, such as fear of infection just after sexual debut in spite of low risk acts such as condom-protected sex or exclusively oral sex (6/34 participants) or because of impromptu testing, often motivated by the “know your status” campaigns (5/34 participants).178 Additionally, in research from South Africa, MSM who were able/comfortable enough to disclose risk behavior (e.g., unprotected anal intercourse) were most likely to have tested more than once (OR=1.79; 95% CI: 1.22-2.63).179 Figure 5-2 shows a conceptual map of some of the testing rationales by MSM in South Africa.

Some men also reported testing as a result of concern about a risky event or indicated they would test if they felt sick.165 Having been tested several times before and having received negative test results also made it “easy” for some men to test. These results suggest that social support and efforts to make testing routine may improve test-seeking behavior.
5.3.2 Studies 1, 2, 12, 19, 23, 28: MSM Care-Providing Perspective

Effective HTC requires nonjudgmental support and high-quality services aimed at addressing the specific needs of MSM in a manner that encourages trust in the system. Targeted training for HCW who provide services to MSM on sensitivity regarding their sexual behavior and counseling techniques may help HCW appropriately address MSM needs. During training sessions for HCW, didactic content as well as opportunities for HCW group reflection can reportedly empower HCW to discuss MSM sexual behavior. When MSM were asked who they trusted for information on HIV and AIDS, the most trusted sources were doctors in private practice, hospitals or clinics (90%; 95% CI: 83.7–94.8), doctors in government hospitals and clinics (84%; 95% CI: 76.5–88.4), and gay/lesbian organizations (84%; 95% CI: 79.9–89.7). One study found that MSM were able to receive social support, reduce social isolation, and improve self-esteem through small-group social activities and group meetings used as strategies for disseminating HIV-prevention information.

5.4 Strategies Used to Improve HIV Testing Services for Men Who Have Sex with Men

5.4.1 Studies 1, 15, 29-32: Healthcare Worker Training Approaches

The literature found in this review demonstrates consensus that HCW understanding of the MSM population and delivery of respectful and targeted services encourages MSM access to HTS. Current successful methods used to improve services are training of MSM peer educators and sensitivity training of non-MSM HCWs.
As one example, researchers at the Johns Hopkins Center for Public Health and Human Rights collaborated with a community-based organization, the Center for the Development of People (CEDEP), and the University of Malawi College of Medicine to develop and test the feasibility of providing a combination HIV prevention intervention (CHPI), using behavioral and structural intervention trainings in Blantyre, Malawi. The CHPI components included individual-, health sector-, and community-level interventions—including outreach and education by peer educators, training of HCW, and staff and peer educator capacity building.

To test the feasibility of CHPI, adult MSM (N=103) were followed prospectively from January 2012 to May 2013. Uptake of CHPI services increased over the course of the study, particularly those provided by peer educators, potentially suggesting improved levels of comfort with the intervention and awareness of services. A high proportion of MSM reported discussing HIV testing with peer educators during contacts (follow-up 1: 69%; follow-up 2: 88%; follow-up 3: 82%; p<0.001). Seven participants (8%) were diagnosed with new HIV infections and all were identified in follow-up 1.

Researchers in South African implemented and assessed a 12-month intervention named “Project Biothato” that was adapted from Mpowerment, a community mobilization intervention for MSM in the United States proven to increase HIV prevention behaviors through peer support. The evaluation of Boithato assessed effects on regular HIV testing uptake among MSM in South Africa. Trained MSM-competent HIV services in nonstigmatizing clinical settings were available in two communities. In the one Biothato intervention, community peer support was also offered. In the intervention community, a nearly fourfold increase occurred in regular testing (20% to 50%; OR 3.7, p<.001). Additionally, more MSM who were HIV positive in were linked to care at 12-month follow-up (28% versus 13%).

A study in Kenya assessed a Mombasa-based peer-educator training and peer-driven outreach program involving training 10 to 15 peer mobilisers and 40 peer educators—all of whom were either male sex workers or non-sex worker MSM familiar with the sex worker environment—and subsequent outreach to MSM sex workers. Following a baseline survey, researchers opened a drop-in center in the Mombasa city center. Services provided at the drop-in center included condom and lubricant distribution, HCT, HIV prevention information, and space for relaxation and television viewing. From February 2007 to April 2008, approximately 1,900 male sex workers and non-sex worker MSM contacts were recorded by the peer educators. Respondents reported significant increases in exposure to HTC (56%–68%, p<0.001), visitation of an MSM-friendly drop-in center at ICRH or KEMRI (22%–30%, p<0.001) and contact with peer educators (22%–33%, p=0.001). Respondents with five or more peer educator contacts were more likely to have ever been tested for HIV (87%, aOR=4.37; 95% CI: 2.04–9.36) than participants with no exposures (61%).
The Desmond Tutu HIV Foundation (DTHF) in South Africa and the Kenya Medical Research Institute (KEMRI) in Kenya, in collaboration with the University of Oxford, developed the manual *MSM: An Introductory Guide for Health Workers in Africa* in 2009 to increase HCW sensitivity to MSM during care provision.\(^{152}\) As of 2015, the online version (http://www.marps-africa.org) was cited as frequently used in Kenya; with over 970 HCWs, including over 420 government HCWs having completed it, either through self-training or facilitated learning (E. Sanders, personal communication; as reported in Dijkstra et al.\(^{152}\)). The effect of this training program on HCW knowledge and attitudes was evaluated in 71 Kenyan HCWs in 2012 and showed significant improvements in knowledge of MSM sexual health issues and reduced homophobic attitudes up to 2 years after the training.

**Technical Support**

In another successful example of training-related interventions, Technical Support Units (TSU) in Kenya were set up in 2012 within the Ministry of Health (MoH) to support MoH efforts in delivering effective and efficient HIV prevention programs for key populations.\(^{184}\) During this program, quarterly contacts/outreach with MSM increased from 23% to 55%, uptake of HTC services by MSM increased from 6% to 18%, and uptake of STI screening services by MSM increased from 2% to 14%. This was achieved against the national MSM estimate of 19,998 MSM.

**5.4.2 Studies 13, 17, 33-35: Testing Approaches**

Evidence suggests that a variety of HIV testing approaches may facilitate MSM testing, including voluntary counseling and testing, couples’ voluntary counseling and testing, and HIV self-testing.

**Voluntary Counseling and Testing (VCT)**

The Priority for Local AIDS Control Efforts (PLACE) study\(^{185}\) aimed to (1) assess the acceptability of VCT for the general population, MSM (n=262), and IDUs (n=154) within the context of a venue-based approach, (2) determine if there were differences between those agreeing and not agreeing to testing, and (3) study factors associated with being HIV positive. The PLACE method included selection of priority prevention areas (PPAs), identifying venues where people meet new sex partners, identifying existing HIV prevention activities and the willingness to hold HIV prevention activities in the venue, collecting information about the characteristics of venues and the individuals attending venues including offering VCT (approximately 97% of MSM agreed to VCT through this intervention, indicating a highly successful program for this particular population), and using the findings to inform decision-making.

**Couples’ Voluntary Counseling and Testing (CVCT)**

The results from online surveys and qualitative IDI and FGD in South Africa suggest a very high level of demand for CVCT services among both White/European MSM South African

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5-12
Facebook users (89%, n=486, sample 89% White/European African)\textsuperscript{186} and township MSM in South Africa interviewed face-to-face (qualitative, n=71, sample 52% Black, 24% Coloured, 21% White).\textsuperscript{187} Participants reported being attracted to the counseling components of the service, stating that these would allow for the couple to increase their commitment and to explore methods of how to effectively reduce their risk of acquiring or transmitting HIV in the presence of a trained counselor.\textsuperscript{187} South African men who reported unprotected anal intercourse at last sex were significantly more likely to report willingness to use CVCT (OR: 2.7; 95% CI: 1.3–5.8) as compared with men who reported condom use at last anal sex.\textsuperscript{164}

**HIV Self-Testing (HIVST)**

HIVST represents another promising testing alternative. In a study conducted in Kenya, Malawi, and South Africa, 54 key informants ranging from government policymakers to academics, activists, donors, procurement specialists, laboratory practitioners, and health providers participated in interviews to offer their perceptions on policy, implementation, and concerns, challenges and perceived evidence gaps to HIVST.\textsuperscript{168} They reported that self-testing offered an accurate, easy-to-use, rapid testing method that could be used at a range of health facility and community-based distribution points for MSM. Key informants felt that HIVST will be an important complement to existing community and facility-based testing approaches if they include access to accurate information, linkages to care, and context-specific consideration before scale-up. Key informants also recommended that WHO policy and regulatory frameworks guide scale-up in those areas that are new to self-testing.

### 5.5 Ongoing Research and Programming

#### 5.5.1 Multisite Combination Programs

**Anova’s Health4Men Initiative**

Anova’s Health4Men initiative provides competent, prejudice-free sexual healthcare for MSM and promotes sex-positive attitudes among healthcare workers (www.health4men.co.za). Part of Health4Men’s activities are aimed at finding ways of strengthening the healthcare system through training and the introduction of “MSM-competent” sites. Health4Men runs MSM sensitivity training workshops in both Johannesburg and Cape Town, South Africa, to combat stigma by healthcare workers. Among other services offered are HIV testing, CD4 measurement, and ART provision and management. MSM can use their cell phones to identify and locate their nearest competent clinic through the Health4Men mobile site, as well as finding MSM-specific information on HIV prevention and treatment, other STIs, and substance abuse. Health4Men also maintains an active media presence known for brazen campaigns.
**Linkages across the Continuum of HIV Services for Key Populations Affected by HIV (LINKAGES)**

The LINKAGES program, which was described previously in the chapter on FSW, also targets MSM. LINKAGES conducts a range of activities to reduce HIV transmission among key populations and improve enrollment and retention in care. Malawi and Kenya are among the 25 countries in which this program is operating. Key program approaches include identifying key populations and locales and comprehensively assessing risk, diagnosing “leaks” and revealing access barriers within the HIV services cascade, scaling up “what works” and addressing structural barriers.

**The Sauti Program, Tanzania**

The Sauti program, which was also described previously in the chapter on FSW, targets their services to MSM. This 5-year, PEPFAR-funded program operates in 11 regions of Tanzania, with 30 mobile testing units and 25 drop-in centers. This project went into the field in late 2015, offering HIV testing and a range of other health services to MSM (as well as sex workers and vulnerable adolescent girls). In addition to providing dedicated MSM services, the program brings in government providers to train them in how to provide services to MSM by giving them exposure to and providing mentoring in Sauti MSM clinics. Services include HIV testing and a broad range of other clinical services, outreach, curriculum-based activities, gender-based violence support groups, savings and loan groups, and legal assistance.

### 5.5.2 HIV Self-Testing Among Men Who Have Sex with Men

**3IE Self-Testing Initiative**

As previously described in the chapter on FSW, the 3IE Self-Testing Initiative is a study among 100 MSM (and 100 FSW) who were surveyed using convenience sampling at clinics and drop-in centers in Mombasa, Kenya, to explore potential users and messaging for oral HIV self-testing. HIV testing among MSM was near universal, with 92% reporting testing in the past 12 months and 86% in the previous 6 months. Among respondents, 47% had seen or heard about HIV oral self-test kits, though none reported having used it; 57% of participants indicated they would self-test if kits were available. Among those who responded they would use the kit, the most commonly cited reasons for use included ease of use (70%), confidentiality and privacy (68%), and don’t need to visit a clinic (28%). Additionally, 57% of respondents reported they would procure and perform the test on their own, and 40% stated they would go to a health facility/VCT for confirmation. Of the 57% who said they would use the test, about half stated that they would prefer to obtain the test kits from either private chemists/pharmacies (49%) or government clinics (47%). MSM who reported having a recent HIV test (past 6 or 12 months) reported less willingness to use oral test kits. MSM with high-risk sex behaviors, including not using a condom at last sex or
having multiple male sex partners within the past month, also reported less willingness to use oral test kits.

**Home Testing Among Men Who Have Sex with Men**

A study currently underway in South Africa, funded by the U.S. National Institutes of Health (PI Sheri Lippman), aims to determine (1) the acceptability of HIV self-testing among HIV-negative MSM by examining uptake of self-testing, preference for self-testing versus clinic-based testing, preference for blood versus oral fluid testing, and use of test kits with partners, (2) the feasibility of HIVST among MSM, including ability to correctly conduct self-testing and interpret the results, and to explore patterns of use, and (3) whether uptake of HIVST results in increased frequency of testing, increased frequency of partner-testing, and changes in sexual decision-making behaviors. Researchers are first conducting a pre-pilot study, to document self-testing uptake and understand what is necessary to ensure safe, correct use of both blood and oral fluid self-tests in a controlled environment. Next they will conduct a pilot study to follow approximately 125 HIV-negative MSM offered self-test kits over 6 months. This study was initiated in 2014 and the results are expected in 2016.

**Self-Testing in Africa (STAR)**

As described previously in the chapter on FSW, the STAR program in Malawi comprises planned formative work around provision of self-testing to MSM. This project will use rapid ethnographic assessment, participatory workshops, and FGD to examine the HIV prevention, testing, and care needs of MSM (and FSW) and the extent to which these needs are currently being met by service providers. The project will also assess the acceptability and feasibility of using peer educators for HIVST distribution among MSM (and FSW).

**5.5.3 Other Research**

**MOSAIC Men’s Health Initiative**

Columbia University, in collaboration with the South African Department of Health, is implementing the MOSAIC Men’s Health Initiative to increase coverage and coordination of comprehensive HIV-related services for MSM, including peer-based outreach and safer sex pack distribution, HCT, and STI and TB screening and referral (http://men2men.co.za/get-informed/mosaic). This research is being conducted in uMgungundlovu district in South Africa, and will evaluate whether MOSAIC increases the number of MSM tested for HIV as well as successful linkages to care and treatment for MSM who are HIV positive by implementing Quality Assurance/Quality Improvement activities as well as focusing on “Delivering the right thing at the right time at the right place.” This research is funded by PEPFAR through the U.S. Centers for Disease Control and Prevention.
Peer Navigation for HIV-Positive Men Who Have Sex with Men

Completed, but as yet unpublished, research in Mpumalanga in South Africa implemented a community mobilization program among MSM, and found greater uptake of regular 6-monthly HIV testing over 2 years in an MSM community where mobilization was implemented (PI Tim Lane). Although they were not study endpoints, linkage and engagement in posttest services were suboptimal, which in part inspired thinking around a peer navigation approach for HIV-positive MSM. Research is now planned to adapt and assess feasibility and acceptability of a pilot peer navigation intervention for HIV-positive MSM in Mpumalanga. The primary aim of this study will be to identify South African MSM’s perceived and experienced barriers to linkage, as well as retention, uptake, and adherence to ART. Additionally, researchers plan to examine feasibility and acceptability of a pilot peer navigation intervention among 100 HIV-positive MSM, tracking adherence to the program, navigator retention, and to document reported satisfaction among MSM at 6 months. The study will also randomly assign 100 HIV-positive MSM in Ehlanzeni district, Mpumalanga, to the peer navigation intervention and 100 to referral for standard-of-care MSM-competent clinical services, and then compare engagement in care outcomes. Though this intervention targets HIV-positive MSM, it will collect important data on linkage to care in this population, with and without the peer navigation intervention.

Sibanye Health Project

The Sibanye Health Project, led by Emory University, is designed to develop and evaluate a combination package of biomedical, behavioral, and community-level HIV prevention interventions and services for MSM in South Africa. One component of this project is a pilot prospective one-year study of 200 men in Cape Town and Port Elizabeth, South Africa (www.avac.org/trial/comprehensive-hiv-prevention-package-msm-southern-africa-pilot-study-sibanye-health-project). The study will assess a package of HIV prevention services, including condom and condom compatible lubricant choices, risk reduction counseling, CHTC, pre-exposure prophylaxis (PrEP) for eligible men, and non-occupational post-exposure prophylaxis (PEP) for men with a high-risk exposure. One of the secondary outcomes of this research is uptake of VCT and CVCT services. Formative qualitative research—consisting of 79 IDIs, and six FGDs in Cape Town and Port Elizabeth-informed the pilot study, and a total of 37 healthcare providers completed training designed to facilitate clinically and culturally competent care for MSM in the Eastern Cape.

Key Populations Implementation Science Initiative: Optimize Continuum of Care for Difficult-to-Reach Men Who Have Sex with Men

The CDC is funding an implementation science initiative to improve the continuum of HIV care for MSM communities in South Africa. The overall objective of the initiative is to find MSM who are unaware of their HIV status, increase linkage to care and treatment initiation, and achieve viral suppression. The intervention includes peer navigators with adherence
support via SMS reminders provided to the patients. At the beginning of the study, HIV testing and care sites from control and intervention communities will receive MSM sensitivity training as well as point-of-care CD4 and creatinine screening capabilities. The study will use a mixed-method study design, including a stepped-wedge design in two initial/two delayed communities comparing the study outcomes of percentage linked to care, percentage initiating ART, and percentage viral load suppressed; as well as 10 IDIs per site to identify barriers for HIV testing and two to four FGDs per site to study barriers/facilitators to ART adherence.

5.6 Discussion

Overall, a moderate number of studies were identified on the barriers, facilitators, and strategies to address uptake of HTS for MSM. These have been summarized in Figures 5-3 and 5-4. The majority of these studies appeared in two countries: Kenya and South Africa. There is general consensus on the existence of broad societal homophobia across Sub-Saharan Africa, including in the countries reviewed here. The resulting criminalization, stigmatization, and discrimination create particularly harmful dynamics that deter MSM from testing for HIV and linking to care, and limit HCW ability to address their specific needs.

Primary barriers to engagement in HTS identified in this review include experiences of discrimination by HCW and family members, fears of having to disclose sexual activity, prior victimization because of sexual orientation, internalized homophobia, and lack of access to information on HIV and testing services. Criminalization of same-sex relationships among men perpetuates stigma and discrimination; consequently, service providers report concerns of adverse repercussions, as well as a number of personal prejudices, related to the provision of services to MSM. Some of the strongest evidence of facilitators of HIV testing comes from South Africa, identifying symptoms, fear after sexual debut, sex with a partner with unknown or HIV-positive serostatus, and couples testing as facilitators for testing.

5.6.1 Healthcare Worker Outreach and Training

The literature from this review demonstrates consensus on how HCW understanding of the MSM population and delivery of respectful and targeted services encourages MSM access to HIV prevention and treatment services. Current successful methods include training and use of MSM peer educators, as well as sensitivity training of non-MSM HCW. Both of these approaches are designed to facilitate HCW and educators understand the challenges that MSM face in order to enable tailored HIV prevention services. HCW sensitivity training interventions have demonstrated significant improvement in knowledge of MSM sexual health issues and reduced homophobic attitudes up to 2 years after the training,\textsuperscript{176,177,188} and MSM engagement with peer educators was followed by increased service uptake by MSM, suggesting improved levels of comfort and awareness of services.\textsuperscript{181}
Figure 5-3. Barriers to Testing and Linkage: Men Who Have Sex with Men

- Experienced stigma or discrimination from providers and lack of confidentiality
- Feeling of discrimination from community while seeking services at public clinics
- Experience of victimization on the basis of sexual orientation
- Experienced stigma or discrimination from family members
- Being black, coloured, or Indian
- Loneliness
- Lower income
- Lack of knowledge
- Fear of test result
- Internalized homophobia or shame
- Uncertainty
- Not self-identifying as gay or gay identity
- Criminalization
- Policies and programming focused on heterosexual transmission

Figure 5-4. Facilitators to Testing and Linkage: Men Who Have Sex with Men

- Recruiting and VCT at venues where people meet new sex partners
- Developing cultural competency among healthcare workers
- Building and leveraging social networks to reduce social isolation and disseminate HIV information
- Advice or support from others (peers, partners, family)
- Testing with a sex partner to allow for unprotected sex
- HIV knowledge / importance of testing
- Comfort disclosing risk behavior
- Concern after sexual risk or symptoms
- Identifying as gay
- Education
- Age

Policy
Community/Organization
Interpersonal
Individual
This review identified a limited number of studies, completed and ongoing, on training and support of HCW. How generalizable these programs are remains an outstanding question, and region-specific tailoring of trainings and evaluation may be necessary for effective implementation and scale-up in other settings.

### 5.6.2 Testing Methods

**Couples Voluntary Counseling and Testing**

The results from online surveys, qualitative IDI and FGD in South Africa suggest high demand for CVCT services among MSM. Those reporting unprotected anal intercourse at last sex were significantly more likely to report willingness to use CVCT; suggesting that MSM view CVCT as an opportunity to discuss recent risks and receive HIV test results with partners. In one study, MSM reported typically testing separately and disclosing results to each other afterward. Having a fuller understanding of what CVCT means to MSM and exploring models to accommodate testing and disclosure of the results within sexual partnerships will be important. No studies identified within this review implemented CVCT interventions specifically for MSM, representing a gap in the evidence base.

**HIV Self-testing**

Recommendations from WHO and UNAIDS highlight that HIVST may increase access to testing and earlier diagnosis for those who do not or cannot access available services, or who prefer having autonomy and privacy while testing, and that HIVST may facilitate voluntary disclosure within couples. A body of research is emerging on HIVST as a strategy to increase uptake of testing among MSM. Some research suggests routine testing is already common among MSM, but that HIVST might reach those at highest risk. It is possible that in some settings HIVST may be a “niche” product for MSM, which would add convenience and confidentiality to routine testing. Important research is ongoing on accuracy and preferences around HIVST, as well as on distribution methods. Also, important data will be collected on how HIVST might be used with partners and how it might affect sexual decision-making. Overall, the self-testing research among MSM is in a preliminary stage. However, with several studies completed or ongoing, knowledge around whether and how self-testing might facilitate and improve routine testing in MSM is growing. Further research is undoubtedly required to improve current knowledge about acceptability and demand for HIVST among MSM, accuracy, and optimal distribution models. Research on how to facilitate and improve linkage to posttest services is lacking, and represents another important gap in the literature. With that in mind, because of the convenient and confidential nature of HIVST, this may be an ideal strategy to increase testing in MSM.
Guidelines for MSM Testing Approaches

In 2011, WHO released guidelines on the Prevention and Treatment of HIV and other Sexually Transmitted Infections among MSM and Transgender People, indicating that offering HTC, specifically community-based HTC, to MSM and transgender people was strongly recommended, but specified that the recommendation was based on very low-quality evidence. WHO then released a technical brief and Consolidated Guidelines on HIV Testing Services in 2015, as well as a jointly published in-depth guide on implementing comprehensive HIV and STI programs for MSM, again highlighting the need for MSM HTC in community and clinical settings with linkages to prevention, care, and treatment services.

WHO noted the need for greater accessibility to HTS for MSM and recommended a number of strategies to address identified accessibility issues (although unspecific to Sub-Saharan Africa), citing the limited amount of research available on each topic. These included offering community-based, decentralized services through mobile outreach and at fixed locations, ensuring services are at easy and safe locations for MSM to reach, ensuring access to appropriate sexual and reproductive health information and medical treatment regardless of marital status, ensuring that services are non-coercive, respectful, non-stigmatizing, making individuals aware of their confidentiality rights, training healthcare providers on the health needs of MSM, as well as relevant overlapping vulnerabilities such as selling sex or drug and alcohol use.

The evidence found within this literature review examines multiple components of the WHO recommendations from 2015. However, key components remain less adequately assessed, including critical assessment of mobile outreach strategies; increasing ease of service timing/cost/access; ideal integration of HTS and other services.

Ongoing research and programming will shed additional light on several of these important gaps. However, more data are needed to assess optimal HTS for MSM, and to provide insight into the generalizability effective strategies.

5.7 Recommendations

Based on the findings for MSM, the following recommendations can be made:

▪ Decriminalize same sex sexual activity, which will reduce harmful dynamics that deter MSM from testing for HIV and linking to care.

▪ Develop and evaluate programs to combat stigma, which was the primary barrier to HTS identified in this review.

▪ Adapt, implement, and evaluate interventions that have been successful in addressing stigma and discrimination, notably in Kenya and South Africa, to other settings where research and programming is absent or extremely limited.
- Train and support HCW to develop and improve understanding of the sexual health needs of MSM.

- While demand for HIV testing is relatively high among MSM, less is known about linkage to post-test services. Conduct implementation research to explore linkage and ways to facilitate linkage is recommended.

- Conduct further research and programming on how to promote and support CVCT among MSM, for which high interest has been expressed.

- Peer navigation/community-based outreach are promising strategies to engage MSM in HTS. Conduct implementation research in this area, with careful monitoring and impact evaluation.

- Conduct further research on HIVST among MSM; in particular, around whether and how self-testing might facilitate and improve routine testing in MSM, how self-testing might be used to facilitate couples testing, and how it might affect sexual decision-making.
6. PEOPLE WHO INJECT DRUGS

6.1 Introduction

Reliable data for PWID in Sub-Saharan Africa are limited. The United Nations Office on Drugs and Crime currently suggests there are an estimated 1,020,000 PWID in Sub-Saharan Africa. However, this estimate could range between 300,000 and 6,240,000.\textsuperscript{194} Among PWID, 5% to 10% overall are thought to be living with HIV.\textsuperscript{194} Table 6-1 highlights the descriptive epidemiology of HIV, population size, and harm reduction responses among PWID in the focal countries. Because of the lack of a systematic approach to collecting and analyzing these data at a national level, the numbers reported should be seen as our best understanding, but also viewed with caution.\textsuperscript{195}

Table 6-1. HIV Prevalence, Population Size Estimation, and Harm Reduction Responses Among Selected Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Adult HIV Prevalence</th>
<th>Number of PWID</th>
<th>PWID HIV Prevalence</th>
<th>Needle and Syringe Programs</th>
<th>Opioid Substitution Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya</td>
<td>5.3%</td>
<td>49,167</td>
<td>18.0%</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Tanzania</td>
<td>5.3%</td>
<td>33,000</td>
<td>36.0%</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Malawi</td>
<td>10.0%</td>
<td>Unknown</td>
<td>Unknown</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zambia</td>
<td>12.4%</td>
<td>Unknown</td>
<td>Unknown</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>16.7%</td>
<td>Unknown</td>
<td>Unknown</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>South Africa</td>
<td>18.9%</td>
<td>67,000</td>
<td>19.4%</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Because of the stigma, discrimination, and structural barriers that PWID face, developing an understanding of HTS for PWID should be placed within the context of the larger harm reduction response to drug user health. WHO and the UNODC released a document entitled “Guidance on Testing and Counselling for HIV in Settings Attended by People Who Inject Drugs,”\textsuperscript{196} which recommended a proactive approach toward establishing HTC in settings already attended by PWID, and rigorous assessments of local epidemiology and program implementation that are informed by key local stakeholders, including PWID themselves. It is recommended that HTC should be coordinated with harm reduction services, primary care services for PWID, OST and other drug treatment services, STI and tuberculosis services, and in other venues servicing at-risk populations.
In support of this approach, one key informant interviewed for this review stated:

“These communities are incredibly stigmatized, where they face tons of discrimination and many of their behaviors are illegal. In that context, you have to provide something that they want and need, like needle exchange or opioid substitution therapy. With that, you develop trust, relationships, and the cultural competency to provide a broader range of services, and from there, you can offer things like HIV testing and linkage to care.”

― Researcher at international nonprofit organization

Building from this perspective, we first outline ongoing harm reduction programs, including community-based services and opioid substitution therapy programs, followed by the published and gray literature review, and then present the ongoing research in this area.

### 6.2 Harm Reduction Programming

As Table 6-1 and Figure 6-1 illustrate, only three of the six focal countries—Kenya, Tanzania, and South Africa—have implemented NSP and OST programs. The available programmatic information for each of these countries is outlined below.

#### 6.2.1 Tanzania

PWID in Tanzania face an HIV prevalence of nearly seven times what is observed within the general adult population. In response to the HIV epidemic among PWID, the government of Tanzania, namely the Ministry of Health and Social Welfare (MoHSW), along with Muhimbili University and Hospital of Allied Sciences (MUHAS) and the Drug Control Commission (DCC), with funding from PEPFAR via the U.S. Centers for Disease Control and Prevention (CDC) launched community-based outreach services for drug users in 2010 and the first publically funded OST program on the mainland of Sub-Saharan Africa. A more detailed description of the harm reduction program and how the...
HTS strategies are integrated into them are discussed below in two sections: community-based services and opioid substitution therapy.

Community-based Services

Community-based outreach to drug users was initiated in 2010 through community-based organizations (CBOs). CBOs engaged drug users in programming utilizing three basic approaches: (1) traditional outreach workers who were non-drug-using social workers or health professionals; (2) storefront drop-in centers providing information, education, and communication (IEC) for HIV risk reduction, syringe cleaning kits, psychosocial services for individuals, families and groups, livelihood and skills training, nutritional support, and a venue for 12-Step programs; and (3) two mobile units offering HTC in drug-using communities in Dar es Salaam, Tanzania.

Initial outreach was conducted by outreach workers, then clients could be referred to neighborhood storefront drop-in centers for additional care. On a weekly basis, the mobile HTC units coordinated with outreach workers from each of the CBOs to identify locations and times appropriate for an HTC site, and outreach workers would canvas in the area surrounding the mobile unit. Individuals who tested positive for HIV through mobile HTC units were referred to care and treatment clinics in neighboring hospitals and clinics.

In 2012, one of the CBO sites began offering an NSP, and this was increased in 2014 to seven sites, with one mobile NSP visiting locations where PWID congregate approximately once per week. After a number of CBO visits, interested clients are referred to the methadone maintenance therapy (MMT) program, as shown in Figure 6-2.

HIV Testing Services. While we are unable to disaggregate the number of PWID who have tested with the CBO/mobile testing strategy (other key populations, including sex workers and men who have sex with men, also access testing), this approach typically results in over 12,000 tests for HIV each year on average.
Opioid Substitution Therapy

In February 2011, the first public OST clinic on the mainland of Sub-Saharan Africa was launched at Muhimbili National Hospital in Dar es Salaam, offering MMT. Enrollment into the OST program required referral from a CBO. To be eligible for OST, individuals had to exhibit opioid dependence, show evidence of recent drug injection, and have a positive urine screening for opioids. Before referral to OST, individuals were also required to attend a series of educational sessions on HIV, STIs, medication adherence, and supportive services provided by CBOs. Once enrolled in OST, methadone is provided to clients 7 days a week at the clinic as directly observed therapy. To date, four methadone clinics have been opened in Tanzania—three in Dar es Salaam and one just outside of Stone Town—and they have enrolled over 3,500 methadone patients as of March 2016.

HIV Testing Services. As part of routine care, clients are offered HTC upon enrollment and at routine follow-up periods. At Muhimbili National Hospital’s methadone clinic, 92% of the 1,100 enrollees have been tested for HIV within the methadone clinic. Clients who test HIV-positive are provided escorted, in-person referral to HIV clinical services at the Care and Treatment Center situated in a separate building on the hospital campus. The results from this model of linkage to care are reported in the literature review section below.

6.2.2 Kenya

Similar to Tanzania, PWID in Kenya have a high burden of HIV, with an HIV prevalence 3.4 times what is observed within the general adult population. The emergence of CBOs to provide services to drug users dates back to the late 1990s. However, in 2012 the government of Kenya, namely the Ministry of Health’s National AIDS and STIs Control Program, with funding from PEPFAR, became involved in the response to the HIV epidemic among PWID. A more detailed description of the harm reduction program is discussed below in two sections: community-based services and opioid substitution therapy.

Community-based Services

Although the CBO structure established in Kenya is similar to that in Tanzania, one major difference is that CBOs did not have an OST program to refer clients to until 2014. In 2012, the Kenyan government announced the initiation of NSPs within the country that are guided by national standard operating procedures. After some time to set up the program, 10 NSP sites were established in 2014: 4 sites in Nairobi, 3 sites in Kilifi, 2 sites in Mombasa and 1 site in Kwale).

HIV Testing Services. Despite multiple attempts to acquire information regarding specific strategies for HIV testing and how many people have been tested for HIV at the community-based service outlets, to date we have not been able to obtain any information. However, we surmise that the HIV testing approach is similar to the strategy outlined for community-bases services in Tanzania.
Opioid Substitution Therapy
In Kenya, methadone maintenance therapy has begun to be operationalized, with funding from the United States government. The University of Maryland, funded by CDC, is the implementer in Nairobi, with one clinic. UNODC, with funding from USAID, is the implementer on the Coast, and to date has opened three clinics with two more in the pipeline. Similar to the program in Tanzania, the program implementation model includes hands-on involvement of CBOs in the recruitment, induction, support, and follow-up of clients. The CBOs also facilitate broader health access for PWID, such as sexual reproductive rights of clients, psychosocial support, capacity-building and income-generation initiatives, linkages to other services, etc. As of March 2016, the program had enrolled over 1100 people onto OST.

HIV Testing Services. Clients are offered HIV testing and counseling on enrollment and at routine follow-up periods. Individuals who test positive for HIV are referred to clinics to enroll into HIV care and treatment. Despite multiple attempts to obtain information regarding how many people have been tested for HIV at the OST outlets and how well they are linked to care, to date we have not been able to obtain any estimates.

6.2.3 South Africa
Programmatic data from South Africa are limited, with reports of only one NSP site focused on MSM who inject drugs. Additionally, there are reports of operational OST sites in South Africa, with plans to increase this service. However, available data suggest that this is restricted to just one government-funded site. While other government hospitals use methadone, it should be noted this is for detoxification services only (e.g., for controlled and supervised withdrawal), and not methadone maintenance therapy. Furthermore, private OST is available in clinics, but coverage remains low in the country because of the cost of treatment and the inability of many PWID to obtain private health insurance. Consequently, we have been unable to identify information with regard to whether or how HTS are integrated within these harm reduction services.

6.2.4 Zambia, Zimbabwe, and Malawi
No data currently exist for Zambia, Zimbabwe, and Malawi with regard to PWID. Currently, the Population Council is conducting the first integrated biological and behavioral research in Zambia to determine the size and HIV risk factors of key populations, including PWID.

6.3 Literature Review
There is limited published research on HTS for PWID specifically, despite a very extensive evidence-base on HIV risk behaviors in this population. Our literature search identified 530 citations (35 were discarded as duplicates). Title and abstract review excluded 466 citations and full text review excluded an additional 23 citations. Six original research papers met our
inclusion criteria, in addition to four sources from the gray literature (Figure 6-3). Of the research presented here, six studies were conducted in Tanzania, three in Kenya, and one was conducted in South Africa. Published sources are listed in Appendix E, Table E-3 and summarized in Table 6-2.

Figure 6-3. Flow Diagram of Selection Process
### Table 6-2. Summary Table of Study Inclusion and Quality for People Who Inject Drugs (PWID)

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author</th>
<th>Country</th>
<th>Study Type</th>
<th>Barrier (B), Facilitator (F), or Intervention (I)</th>
<th>Main Outcome(s) Related to this Review</th>
<th>Quality Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mlude, 2016</td>
<td>Tanzania</td>
<td>quantitative</td>
<td>B, F</td>
<td>ever being tested</td>
<td>cross-sectional survey, large sample size (578)</td>
</tr>
<tr>
<td>2</td>
<td>Parry, 2010</td>
<td>South Africa</td>
<td>qualitative</td>
<td>B, F</td>
<td>motivations and prior testing; impact of stigma</td>
<td>131 IDI with drug users, 19 IDI with providers and 21 FSG</td>
</tr>
<tr>
<td>3</td>
<td>Mlewa, 2015</td>
<td>Kenya</td>
<td>quantitative</td>
<td>I</td>
<td>ever received testing and knowledge of testing importance</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>4</td>
<td>Tran, 2015</td>
<td>Tanzania</td>
<td>quantitative</td>
<td>B, F</td>
<td>factors associated with improved linkage to care</td>
<td>retrospective cohort study, smaller sample size (148)</td>
</tr>
<tr>
<td>5</td>
<td>Saleem, 2015</td>
<td>Tanzania</td>
<td>qualitatative</td>
<td>B</td>
<td>barriers to linkage to care</td>
<td>IDI with 20 clients and 12 providers</td>
</tr>
<tr>
<td>6</td>
<td>Lambdin, 2013</td>
<td>Tanzania</td>
<td>quantitative</td>
<td>B</td>
<td>gender and access to services</td>
<td>outreach contact data and baseline survey, large sample (8578 contacts)</td>
</tr>
<tr>
<td>7</td>
<td>Zamudio-Haas, 2016</td>
<td>Tanzania</td>
<td>qualitative</td>
<td>B, F</td>
<td>gender and access to services</td>
<td>IDI with 25 patients and their providers</td>
</tr>
<tr>
<td>8</td>
<td>Kamuti, 2013</td>
<td>Kenya</td>
<td>n/a</td>
<td>I</td>
<td>uptake of services</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>9</td>
<td>Kamuti, 2013</td>
<td>Kenya</td>
<td>n/a</td>
<td>I</td>
<td>uptake of services</td>
<td>N/A abstract only</td>
</tr>
<tr>
<td>10</td>
<td>Han, 2015</td>
<td>Tanzania</td>
<td>n/a</td>
<td>I</td>
<td>uptake of services</td>
<td>N/A abstract only</td>
</tr>
</tbody>
</table>
Primary Barriers and Facilitators to HIV Testing Services for PWID

Study 1: "A Mismatch between High-Risk Behaviors and Screening of Infectious Diseases among People Who Inject Drugs in Dar es Salaam, Tanzania"

A cross-sectional study (N=578) was conducted among PWID in three municipalities in Dar es Salaam, Tanzania, to examine high-risk sexual behaviors; utilization of screening services for HIV, hepatitis B and C, other STIs and tuberculosis; and factors associated with ever being screened. Study participants were recruited through two modalities: (1) using convenience sampling from a pool of new enrollees of an integrated MMT program at two hospitals (n=280), and (2) using snowball sampling to conduct community recruitment of PWID not enrolled in the program (n=320).

Among other outcome variables, ever been screened for HIV infection was assessed. Of all participants, 36% had ever been screened for HIV. In regression analysis, factors associated with ever being screened for HIV included having an education level higher than primary education (aOR: 2.54; 95% CI: 1.54–4.20); having a history of transactional sex (aOR: 2.63; 95% CI: 1.01–6.84); and being a new enrollee of the integrated MMT program (aOR: 7.41; 95% CI: 4.26–12.86). The authors point to an important disjuncture between reported high-risk behavior and disease screening in the sample. For instance, 14.2% reported sharing a needle at last injection, 15.6% had ever practiced flashblood (injecting blood from another person who has recently injected heroin to attempt to stave off drug withdrawal and experience an intoxication or “high”), and 6.8% had ever had transactional sex; but only 36% of the sample had ever screened for HIV, 18.5% for tuberculosis, 11.8% for any other STI, and 11.6% for hepatitis B or C. The authors suggest that this disjuncture may be caused by factors that have been demonstrated in previous studies, such as poor access to screening services experienced by PWID, stigma associated with drug use, perceptions of low HIV risk, and fear associated with testing.

Study 2. "Opportunities for Enhancing and Integrating HIV and Drug Services for Drug Using Vulnerable Populations in South Africa"

A cross-sectional qualitative study was conducted among people who use drugs and NGO/CBO providers in Durban, Cape Town, and Pretoria, South Africa to explore drug user HIV risk, knowledge and experiences with drug treatment services, knowledge and experiences with HIV intervention services, and current and perceived need for integration between services. The study was conducted in two Phases. Phase 1, conducted in 2005, was designed to examine barriers and facilitators to HIV and drug treatment services and willingness to be tested for HIV, and included 131 semi-structured interviews with drug users, 21 FGD with 109 participants, and 19 semi-structured interviews with NGO/CBO
providers. Phase 2, conducted in 2007, was designed to assess if new trends in drug use had emerged over time and to refine qualitative data collection about service delivery that had been raised in Phase 1. Phase 2 included semi-structured interviews with 11 service providers and 13 FGD with 69 drug users. With respect to HIV testing, in Phase 1 the study found that (1) study participants were interested in accessing VCT, (2) 60% of PWID agreed to HIV testing and many reported having been tested in the past, and (3) motivations for testing in the past included high-risk sexual or drug use behavior, having an HIV-positive friend or partner, and being treated for other STIs. Drug users in the study expressed experiencing stigma, having perceptions that services were not accessible to them based on their drug-using status, and that service providers and mobile clinic staff were hesitant to visit areas where drug users frequent. In Phase 2 of the study, participants identified that VCT should be offered at drug treatment centers.

6.4.3 Study 3. "Understanding Low Threshold HIV Testing for People who Inject Drugs in Kenya"

The Kenya AIDS NGO Consortium has established a harm reduction program, which over the course of 3 years reached 6000 PWID in areas with high concentrations of drug use. Mlewa reports findings from a quasi-experimental study utilizing a cross-sectional survey design before and after an unspecified intervention, from a sample of 188 respondents randomly drawn from the larger sample of 6000 in five project implementation sites in Kenya. Among PWID, 98.2% had ever received HIV testing after the intervention, compared with 60% before the intervention. 90% reported knowledge about the importance of HIV testing and 96% of PWID reported preference for outreach-based HIV testing services. The proportion of PWID who have taken an HIV test three months after exposure to a risky sexual contact was less than 26.3% before the intervention and 58% after the intervention. While these findings are promising, the results of the intervention have not yet been published; consequently, the full information needed to appropriately interpret the findings is lacking.

6.4.4 Study 4: "Linkage to Care Among Methadone Clients Living With HIV in Dar es Salaam, Tanzania"

A retrospective cohort study of HIV-positive clients (N=148) was conducted among people enrolled in a MMT program at Muhimbili National Hospital in Dar es Salaam, Tanzania between February 2011 and January 2013. The aim of the study was to examine factors associated with linkage to HIV care and also to explore the role of an MMT program as a venue for HIV care and treatment (see ongoing programming description above). MMT clients who test positive for HIV are accompanied in person to be linked to HIV clinical services at the HIV care and treatment center, which is located nearby but in a separate building from MMT.
The outcome of interest was number of days between the first HIV-positive test and CD4 result. At 30, 60, and 90 days after their HIV diagnosis, the probability of clients undergoing CD4 screening (a measure of linkage to care) was 40% (95% CI: 32%–48%), 55% (95% CI: 47%–63%), and 63% (95% CI: 55%–71%), respectively. Factors associated with improved linkage to care included a higher methadone dose (≥85mg) and self-reported poor health, and clients with a history of arrest were less likely to have received a CD4 count.

### 6.4.5 Study 5: “Can’t You Initiate Me Here?”: Challenges to Timely Initiation on Antiretroviral Therapy Among Methadone Clients in Dar es Salaam, Tanzania

A qualitative study with providers and clients at the same MMT program described above at Muhimbili National Hospital further explicates the potential barriers and facilitators in the process of linkage to care and ART initiation among clients attending the MMT clinic. Semi-structured interviews were conducted to explore HIV care and treatment processes, barriers and facilitators to linkage to care and ART initiation, and perceptions of HIV and methadone care integration. Twelve providers and 20 HIV-positive methadone clients were purposefully sampled at the clinic. The following were identified as barriers to linkage to care for methadone clients after receiving a positive HIV result. First, clients and providers described significant delays in the time to initial CD4 testing, which took place at the time of diagnosis, and receiving CD4 test results back from the lab. This delay could last several weeks and was attributed to lack of testing reagents, equipment failure, and problems with access to the hospital electronic patient record system. As one female MMT client reported:

"...And the CD4 test, it’s not that you are tested today and you get the results tomorrow, no. I don’t know why but you could be tested today and the results come out after 2 weeks or 3, for some even a month. So I think that also is a big delay or it is also a reason that delays AIDS patients from getting medicine early."

Another barrier identified was that the methadone clinic where HIV testing and CD4 labs are done is at a separate site from where HIV care enrollment and treatment initiation happen. There is, therefore, potential to lose patients after diagnosis and before they officially enroll in care. As one MMT provider explained:

"If you tell them to go and initiate [ART] at another clinic there, they ask, ‘Can’t you initiate me here?’ When you tell them here we do not have [that service], now that becomes, they say, ‘Okay, I will go.’ But they don’t go. So the whole procedure with the clinic being in a different place from the methadone clinic makes many not ready to start [ART].”

Finally, drug users explained that they experienced multiple types of stigma—including individual, social, and institutional stigma—which had an impact on follow up care and referrals. Individual and social stigma often had an impact on methadone clients’ willingness...
to come to the HIV care and treatment clinic for fear of being marked as a known drug user; and consequently, as criminal or deviant. Participants also reported experiencing discrimination from providers at HIV clinics not specifically designated for methadone clients. However, social support and family support was identified as a protective factor against these multiple types of stigma and as a facilitator of HIV care.

### 6.4.6 Studies 6 and 7: “Identifying Programmatic Gaps: Inequities in Harm Reduction Service Utilization among Male and Female Drug Users in Dar es Salaam, Tanzania” and “Generating Trust: Programmatic Strategies to Reach Women Who Inject Drugs with Harm Reduction Services in Dar es Salaam, Tanzania”

In another analysis, Lambdin et al. assesses inequities in utilization of MMT and outreach services among male and female drug users in a sample of patients from four CBOs operated by the Tanzanian AIDS Prevention Program and the methadone program at Muhimbili National Hospital. Outreach contact data from the electronic databases at the CBOs and the hospital, in addition to a comprehensive baseline survey conducted at the time of enrollment into the MMT program were examined to identify programmatic gaps and identify where needs still exist. Between December 2010 and August 2012, 8,578 outreach contacts were made with drug users, of which 22% were PWID. Of all clients receiving outreach and referral to or enrollment in MMT, only 8% or less of drug users accessing services were women. In the researcher’s weighted estimations in three other surveys, they expected that 34% of PWID to inject drugs to be female, suggesting that a large proportion of female PWID are not accessing PWID-specific services. This is especially troubling given the disparities in HIV prevalence among women who inject drugs (68%) as compared with men (28%).

A subsequent qualitative study conducted with patients from the same MMT clinic in Dar es Salaam found that women and men use drugs in distinct physical and social spaces. Outreach services targeting public places of drug use often fail to reach women, who are less likely to congregate in areas dominated by men who inject drugs and are more likely to be active at night. Many women still face a high risk of either acquiring or transmitting HIV, resulting from low condom use during sex work to fund drug use. This exploratory study suggests that programmatic strategies to reach women who inject drugs need to include alternative and innovative outreach strategies that include peer outreach workers conducting outreach during time frames and at locations that are more appropriate for reaching women.
6.5 Strategies Used to Improve HIV Testing Services for PWID Identified in the Literature

6.5.1 Studies 8, 9, and 10: Innovative Programming for PWID

Data reported from three conference presentations suggest innovative programming for PWID that may address some of the barriers described above and that are proactive in establishing HIV interventions in settings already attended by PWID, as per the WHO guidance. In Nairobi, Kenya, a drop-in center designed with input from PWIDs was established to provide harm reduction services to the PWID community. The center used a peer educator model to enhance the uptake of drop-in center services. A peer educator escorts PWID to the center on a daily basis, where they can access health services, nutrition services, needle exchange, and one-on-one and group counseling. In a 5-month period, more than 400 PWID were enrolled at the center.

At this same site, another analysis examined the benefit of using a peer educator model to strengthen the referral system for services for PWID. When referrals for psychosocial, risk reduction, substance use counseling, HTC, and needle exchange services were provided, a peer educator accompanies PWID to each health facility to ensure that they access services and that services are provided appropriately. The peer educator returns documentation of all referral activities to the center so that follow-up can be done by drop-in center staff. The authors reported an increase in the utilization of HIV prevention services by PWID.

Another study examined the role of “micro-planning” to improve access to health services and promote community mobilization among PWID in Tanzania. This strategy directly involves PWID in the planning and management of outreach services to other PWID, enabling PWID to make decisions about the best modalities for provision of harm reduction services in their specific local contexts. This study found that the number of PWID accessing services increased fourfold after implementation of this strategy.

6.6 Ongoing Research

6.6.1 Integrated Methadone and Antiretroviral Therapy (IMAT) Initiative

To improve linkage to care and ART initiation among HIV-positive MMT clients, the National Institute of Drug Abuse has funded research to use a human-centered design, engaging patients and providers in an iterative process, whereby the study team conducts IDIs with patients and providers; conducts a cross-sectional survey with patients; and hosts community engagement meetings with patients, providers, and policymakers (PI Barrot Lambdin).

Although blood is drawn from clients at the MMT clinic for HIV and CD4 testing, HIV care enrollment and ART initiation is conducted off-site, often at the hospital’s HIV care and treatment clinic. The inconvenience of having to go off-site for ART initiation was described
by some participants as another systemic barrier to treatment (see Section 6.4.5). Participants viewed HIV- and drug-related stigma as hindering timely linkage to care and ART initiation. This stigma operates on multiple levels, including the individual and institutional levels. One provider described the rationale for an IMAT provider escorting MMT clients to the HIV clinic:

“The aim of escorting them is that HIV patients...are usually treated in a way that is not okay. That even the way the [HIV care and treatment] nurses attend to methadone clients, they are not so compassionate. They still think they are at their initial condition when they were thieves. So they attend to them in a suspicious manner. And most of the time they are not taken seriously. That is why we find ourselves escorting them.”
— Pharmacist at the methadone clinic

At the individual level, internalized stigma because of one’s HIV status was perceived as a barrier to following up on CD4 results for ART initiation:

“The problem is the fear of being stigmatized. Most of the time [an MMT client] knows that when he is on [ART], he has to come for medication. He is now afraid that people will see him coming for medicine and forget that he is in recovery and rather see him as someone who is living with HIV.... So this stigma is the problem. So for these people, before you give them [ART], you must give them a lot of counseling.”
— Nurse at the MMT clinic

Cross-sectional surveys were administered to 141 HIV-positive MMT clients from Muhimbili National Hospital. 45% of participants traveled more than 60 minutes per day to arrive at the clinic. Transport time (67%) and transport cost (83%) were reported as barriers to treatment. Among female participants, 37% reported engaging in transactional sex to finance their transport costs to the methadone clinic. Overall, participants reported high self-efficacy for adherence to HIV treatment plans, including but not limited to taking HIV medications.

Participants believed that integration activities would help them to initiate and engage in HIV care. When asked about their perception of integrating all HIV services into the methadone setting, 94% reported that they were comfortable with it, 93% thought it would improve their satisfaction with

<table>
<thead>
<tr>
<th>Table 6-3. Acceptability of Integration Components by Methadone Maintenance Therapy Clients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Integration of all HIV Services into Methadone Setting</strong></td>
</tr>
<tr>
<td>Comfortable</td>
</tr>
<tr>
<td>Improve Satisfaction</td>
</tr>
<tr>
<td>Improve Quality of Care</td>
</tr>
<tr>
<td>Improve Health</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Potential IMAT Components</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Would prefer point-of-care CD4 (same day results)</td>
</tr>
<tr>
<td>Would prefer clinical visits by MMT clinic provider</td>
</tr>
<tr>
<td>Would prefer to receive ART from MMT clinic pharmacy</td>
</tr>
<tr>
<td>People with HIV would be treated the same as people without HIV</td>
</tr>
</tbody>
</table>
services, 90% thought it would improve their quality of care, and 96% thought it would improve their health, as shown in **Table 6-3**.

**IMAT Implementation**

In the fourth quarter of 2015, the study team piloted the IMAT strategy at the MMT clinic at Muhimbili National Hospital (**Figure 6-4**). To address potential barrier to ART initiation, three different ART dispensing models were introduced that clients could choose from: (1) directly observed therapy (DOT) by a clinician in a private setting, (2) DOT at the methadone dispensing window, or (3) monthly supplies of ART (standard of care in Tanzania). As of March 2016, data indicate that 20% of clients have chosen DOT by a clinician, 5% have chosen DOT at the methadone window, and 75% have chosen monthly supplies of ART. Which is the optimal ART dosing model for MMT clients in Tanzania remains an outstanding question.

In the first quarter of 2016, Tanzania’s MoHSW adopted a test and treat model for HIV among PWID in Tanzania. The implementation of IMAT effectively allows providers at the MMT clinic to treat an HIV-positive individual without having to determine eligibility based on a specific CD4 threshold, which is an exciting development due, in part, to the community engagement efforts with the MoHSW’s National AIDS Control Program as part of the IMAT development.

### 6.6.2 Seek, Test, Treat and Retain for People who Inject Drugs in Kenya

The National Institute on Drug Abuse is funding a testing and linkage to care study focusing on PWID in Kenya (PI Ann Kurth). The study is based in Nairobi and Coast provinces of Kenya. PWID who are attending one of the government’s NSP sites are provided rapid HIV testing. HIV-positive clients who are eligible for treatment (CD4<350) are assigned a peer case manager to help them navigate the continuum of HIV care. The study was planned as a randomized stepped wedge design where the intervention was randomly rolled out to different NSP sites at different points in time. The investigators mentioned difficulties with the stepped-wedge design, but it is unclear if this resulted in shifting to a different design. The study outcomes include linkage to care, defined as first visit with an HIV clinician, and ART initiation. Study results should be presented within the next 1 to 2 years.
6.6.3 Optimized Methadone Delivery with Take Away Doses in Tanzania

The U.S. Centers for Disease Control and Prevention is funding an implementation science initiative that will effectively shift the MMT program to a more community-based model of delivery (PI Trista Bingham). Methadone is currently dispensed as a once daily regimen in Tanzania, whereby clients present to the clinic daily to receive their DOT methadone dose. The overall objective is to develop, implement and evaluate the effectiveness and costs of a strategy for take-away doses of methadone for implementation in OST clinics in Dar es Salaam. The study setting includes MMT clinics at Muhimbili National Hospital, Mwananyamala Regional Hospital and Temeke Regional Hospital, as well as CBOs involved in outreach among people who use drugs.

Although this initiative does not directly address HTS, it does address the structure of MMT services; and by doing so, the take-away dose strategy can dramatically improve the number of people accessing MMT. This, in turn, can drive the number of people being screened for HIV and linked to care when these services are integrated within the MMT setting.

6.7 Discussion

Overall, only a small number of studies were identified through this review that look at barriers, facilitators, and strategies to address HTS for PWID. This is not surprising as existing policies in these countries prior to 2010, the starting point of our review, did not create an enabling environment for the development of programs to address the needs of PWID. However, in the past 6 to 7 years, countries have started to recognize the urgency to address the HIV epidemic among PWID and have begun to adapt national policies so that legally sanctioned harm reduction programs can operate with the government mandate. Interviews with key informants elucidated the development of programs that have emerged following governments’ adoption of harm reduction approaches. Because these developments have been relatively recent, research on the impact of these programs is still in a nascent stage. This research gap presents a substantial opportunity for multidisciplinary research and evaluation of emerging initiatives and future prospects for promising interventions based on an ever-growing evidence base regarding barriers and facilitators for PWID.

There is evidence that PWID are interested and motivated to engage with HTS and that they recognize the importance of being tested. Yet, evidence of low testing, despite high-risk behavior, also exists. Figures 6-5 and 6-6 summarize the barriers and facilitators to HTS identified in this review. Stigma and discrimination were pervasive across studies from different settings, and qualitative data points to the impact that stigma and discrimination may have on the ways in which PWID engage with HTS in traditional contexts. One study from Tanzania found both HIV and drug-related stigma among PWID communities. While both HIV and drug-related stigma influence engagement with HTS, an important distinction
Figure 6-5. Barriers to Testing and Linkage: People Who Inject Drugs

- Criminalization
- Denial of Services by Providers
- Among OST clients, inconvenience of off-site HIV clinic
- Unwillingness of outreach workers and providers to visit specific drug using areas
- Physical and sexual violence
- Women who inject drugs
- Previous experiences of stigma & discrimination
- History of arrest / fear of police
- Lower education levels

Figure 6-6. Facilitators to Testing and Linkage: People Who Inject Drugs

- Integrating HTS within culturally competent CBOs & OST Clinics
- Among OST clients, higher methadone doses
- Involvement of PWID in the development of the program
- Peer education/peer navigation
- High risk sexual or drug use behavior
- HIV-positive friend or partner
- Perceived poor Health
- Receiving treatment for other STIs
Section 6 — People Who Inject Drugs

between the two is that drug-related stigma tended to manifest at the structural level whereby PWID often face denial of services or discrimination because they were a known drug user. This is a distinguishing experience as compared with the general population. On the other hand, fears of HIV stigma and rejection by family and community because of disclosure of one’s HIV status mimic what has been widely reported as barriers to testing and linkage to care of non-drug-using people living with HIV.208,209

Existing evidence about the dynamics of stigma and discrimination have implications for future programming and service design for PWID. In particular, these findings emphasize the need to leverage local knowledge and partner with CBOs that have developed the cultural competency to serve PWID in areas where PWID reside or use drugs. It continues to be critical to develop culturally competent models of service provision regarding HTS and to make services more accessible to PWID when they have chosen to engage in clinical care, such as OST. Qualitative research points to the importance of understanding the nuances of the social settings in which drug users reside. Some key questions to address in future research include understanding how to leverage existing findings to develop measures to thoroughly assess the needs of PWID that can be used to create programming that is more responsive to the local risk environment and micro-, meso-, and macro-level barriers facing PWID. This is in accordance with WHO guidance on meeting drug users where they are in the social space of drug use.196

With regard to HIV testing, using the CBOs and OST as platforms for HCT has shown strong results. Research has already indicated that PWID are agreeable to utilizing outreach-based testing. To take HIV testing to the next level, it will be necessary to develop, utilize, and rigorously evaluate innovative outreach methods that are critical to recruiting new clients into community-based services, including HIV testing. These initiatives could improve the reach of HIV testing for PWID and also ensure that harm reduction programs are finding the highest risk and greatest burdened subpopulations of PWID, and not just high-functioning PWID. Community- and outreach-based models of care are promising modalities of reaching PWID outside of traditional settings where PWID have experienced stigma and discrimination.

For linkage to HIV post-test services, one avenue to pursue includes leveraging the competency from OST providers and expanding that to providers within HIV care and treatment centers. This approach has the potential to improve linkage to care among PWID who are not currently accessing OST. However, this strategy would still require people to overcome their historical experiences of stigma and discrimination and navigate an often daunting healthcare system. It would also require intensive harm reduction training on the part of healthcare providers. Another initiative may be to examine the feasibility of adopting more community-based approaches of linkage to care, where services are decentralized and provided at the community level. One permutation of this could include having HIV care and treatment providers who have the cultural competency to care for PWID come to the CBO to
provide linkage services, so that PWID can access HIV care within contexts that are potentially less stigmatizing.

Given the high HIV prevalence among PWID, rapid enrollment into a daily MMT program may have stabilizing effects, and the MMT clinic provides a unique setting to deliver comprehensive HTS to this key population. As research has demonstrated, referral of patients to off-site clinics often results in patients failing to reach timely and appropriate medical care. Recognizing the need to provide comprehensive and appropriate care for this population, WHO outlined a strategic approach for the control of HIV in PWID through integration of multiple services. Integrating different services (i.e., methadone and HIV) can improve access to care, health outcomes, and patient satisfaction while reducing costs that result from duplication in the healthcare system and patient attrition. Integration of services has been successful in settings such as Southeast Asia and Eastern Europe. In Tanzania, one clinic is piloting fully integrated HTS, and opportunities for expanding this approach remain.

Bearing this in mind, it is likely that existing services are still missing the highest risk portion of this population. Research has suggested an inverse relationship between reported HIV risk/burden and engagement in community-based and health-facility-based services. Research from Tanzania suggests that the program is not currently able to effectively engage certain components of the PWID community that tend to have the largest HIV risk and burden. There is a need to develop new approaches so that programs and institutions that serve the communities do not perpetuate inequities among them.

In light of these findings, several limitations should be considered. As with other key populations, population size estimates are limited or unavailable. This lack of information undermines our understanding of the scope of the issue, what resources are required to address the communities, or the impact of current programming. Additionally, population size estimations often do not focus on people who use heroin through smoking and inhaling, and while these communities do not typically inject drugs and have the associated risks, many could eventually begin injection. Another limitation is the limited geographic scope of research that does exist—even in countries where there is research, it is typically focused in the major urban centers. Furthermore, better intervention specification is needed to fully assess and/or replicate findings.

### 6.8 Recommendations

Based on the findings for PWID, the following recommendations can be made:

- Invest in efforts to expand and improve HTS that garner input from PWID themselves (e.g., community advisory boards, drug user advocacy groups, etc.). Foster community empowerment perspectives to design, implement, and evaluate new models of delivery that are responsive to the barriers specific to PWID.
- Pursue innovative approaches, including human-centered design or other community engagement approaches, to develop, implement and evaluate strategies focused on improving engagement by some of the hardest to reach PWID, including communities with the overlapping risks of drug injection and sex work. These could include peer outreach workers for women who inject drugs and/or the utility of respondent driven sampling for recruitment to community-based services.

- Address the intense stigma and marginalization of PWID in HTS, both at the individual and institutional/structural levels. Invest in initiatives that build the cultural competency of medical settings and providers to provide services in a non-stigmatizing/non-discriminating manner.

- Explore the feasibility and acceptability of HIVST for PWID as another community-based approach to HIV testing.

- Accelerate the integration of HIV testing, coupled with linkage services within the OST setting among the established programs.

- Explore the feasibility, effectiveness and efficiency of adopting community-based approaches for linkage to care, where services are decentralized and provided at the community level.

- Develop, implement, and evaluate other community-based models of OST delivery integrated with HIV services (e.g., mobile vans) to improve HTS.

- Conduct mixed-methods research to fully explicate barriers and facilitators for PWID in local socio-spatial contexts and identify areas for new, innovative strategies to engage the hardest to reach PWID.
7. ADOLESCENT GIRLS AND YOUNG WOMEN

Little empirical evidence exists concerning the barriers, facilitators, and successful programs promoting HTS for AGYW. Even where data exist, disaggregation by age and gender as well as the interpretation of those data, are often inadequate. Consequently, some of the data presented here have been drawn from research focused on both male and female youth, and at times from a broader age range. Because uptake of HTS by adolescents is low, and HTS for adolescents has not been developed in many settings, WHO guidelines recommend expanding access to HTS for adolescents in different epidemic settings. In generalized epidemics, WHO recommends HTC with linkage to prevention, treatment, and care for all adolescents (strong recommendation, very low quality evidence).

The literature search identified 3,735 citations. Title review excluded 3,477 citations and abstract review excluded an additional 135 citations. Full-text review eliminated an additional 102 articles, leaving 21 original research publications that met the inclusion criteria. Additionally, 6 sources from the gray literature were included in this review (Figure 7-1). Of the included citations, 12 focused on research conducted in Kenya, 7 on research in South Africa, 3 on research in Tanzania, 3 on research in Zimbabwe, 3 on research in Malawi, and 3 on research in Zambia (Table 7-1 and Appendix E, Table E-4).

7.1 Primary Facilitators to HIV Testing Services for Adolescent Girls and Young Women

7.1.1 Studies 1, 2, 3, 4, 5, and 6: HIV Testing Offered During Antenatal Care Increases HIV Testing

Analysis of survey data has shown that being pregnant, having a child, or having been offered HIV testing as a part of antenatal care is the strongest predictor of having ever tested for HIV among AGYW in Kenya, Malawi, South Africa, Zambia, and Zimbabwe. Among AGYW aged 12 to 22 from Nairobi, Kenya, who were interviewed as a part of the Transition-To-Adulthood survey, having ever been pregnant was the highest predictor of having received an HIV test (OR 7.29; 95% CI: 4.61–11.53). Among those who had ever had sex, about 60% of those tested received the test because they were pregnant or as a part of antenatal care. Similarly, among women aged 10 to 17 in South Africa, pregnancy was the top predictor of engagement in (VCT) (OR 7.34, p<0.001). In a study of male and female young people aged 18 to 24 in South Africa, having been pregnant or making someone pregnant was found to be the highest predictor of HIV testing uptake (aOR 5.71; 95% CI: 3.27–9.97), showing that testing during antenatal care increases uptake among both pregnant young women as well as their male partners.
Figure 7-1. Flow Diagram of Study Selection Process

Adolescent Girls and Young Women

Search results (n=3,735)

Pubmed (n=3,735)

123

full text articles retrieved for evaluation

102 articles excluded for the following reasons:
- Time period (n=0)
- Geographical area of implementation 2 (n=3)
- Target population (n=63)
- Main focus (n=36)
- Evaluation design (n=0)
- Evaluation outcomes (n=0)
- Quality of article and evaluation (n=0)

*Articles may be excluded for more than one reason – first reason for exclusion only noted here

21

articles remaining

Review of gray literature

(n=6)

27

articles included in review
Table 7-1. Summary Table of Study Inclusion and Quality for Adolescent Girls and Young Women

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author, Year</th>
<th>Country</th>
<th>Study Type</th>
<th>Barrier (B), Facilitator (F), or Intervention (I)</th>
<th>Main Outcome(s) Related to this Review</th>
<th>Quality Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Singh, 2013</td>
<td>Kenya, Zambia, and Zimbabwe</td>
<td>Quantitative</td>
<td>F</td>
<td>Having ever tested for HIV</td>
<td>Cross-sectional quantitative</td>
</tr>
<tr>
<td>2</td>
<td>Kabiru, 2011</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>F</td>
<td>Having ever tested for HIV</td>
<td>Cross-sectional survey; large sample size (1,991 female)</td>
</tr>
<tr>
<td>3</td>
<td>Chung, 2015</td>
<td>Malawi and Zimbabwe</td>
<td>Quantitative</td>
<td>F</td>
<td>Having ever tested for HIV</td>
<td>Retrospective data analysis; large sample size (4,042 Malawi; 1,330 Zimbabwe)</td>
</tr>
<tr>
<td>4</td>
<td>Knight, 2014</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>F</td>
<td>Having ever tested for HIV</td>
<td>Cross-sectional survey; large sample size (1,330 female)</td>
</tr>
<tr>
<td>5</td>
<td>Peltzer, 2013</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>F</td>
<td>Having ever tested for HIV</td>
<td>Cross-sectional survey; large sample size (1,420 female)</td>
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<tr>
<td>6</td>
<td>Carty, 2014</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>B, F</td>
<td>Having ever tested for HIV</td>
<td>Cross-sectional survey; large sample size (1,905 female)</td>
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<tr>
<td>7</td>
<td>Sanga, 2015</td>
<td>Tanzania</td>
<td>Quantitative</td>
<td>B, F</td>
<td>Having ever tested for HIV</td>
<td>Cross-sectional survey; small sample size (198 female)</td>
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<tr>
<td>8</td>
<td>Tenkorang, 2013</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>B, F</td>
<td>Having ever tested for HIV</td>
<td>Cross-sectional survey; large sample size (7,166 female)</td>
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<tr>
<td>9</td>
<td>Naidoo, 2015</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>F</td>
<td>Having ever tested for HIV</td>
<td>Cross-sectional survey; small sample size (268 female)</td>
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<tr>
<td>10</td>
<td>Frolich, 2014</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>B, F, I</td>
<td>Uptake of in-school HCT, barriers and facilitators to HCT uptake</td>
<td>In-school intervention; large sample size (1,450 female); targeted group meetings with 8 female students</td>
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<tr>
<td>11</td>
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<td>Malawi</td>
<td>Quantitative, Qualitative</td>
<td>B, F</td>
<td>Having ever tested for HIV</td>
<td>Cross-sectional survey and focus group discussions; (457 questionnaire, 18 focus group discussions, 45 in-depth interviews)</td>
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<td>Kenya</td>
<td>Quantitative</td>
<td>B, F, I</td>
<td>Uptake of home-based HCT</td>
<td>Community intervention; large sample size (5,105 female)</td>
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<td>13</td>
<td>Kabiru, 2010</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>F</td>
<td>Having ever tested for HIV</td>
<td>Cross-sectional survey; small sample size (210 female)</td>
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<tr>
<td>14</td>
<td>Baisley, 2012</td>
<td>Tanzania</td>
<td>Quantitative</td>
<td>F, I</td>
<td>Uptake of VCT</td>
<td>Cross-sectional survey; large sample size (5,628 female)</td>
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</table>

(continued)
<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author</th>
<th>Country</th>
<th>Study Type</th>
<th>Barrier (B), Facilitator (F), or Intervention (I)</th>
<th>Main Outcome(s) Related to this Review</th>
<th>Quality Considerations</th>
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<tr>
<td>15</td>
<td>Madiba, 2015</td>
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<td>B, F, I</td>
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<td>cross-sectional survey; large sample size (1,634 female)</td>
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<td>Mwangi, 2014</td>
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<td>B</td>
<td>Barriers to HCT</td>
<td>cross-sectional survey; moderate sample size (513 female)</td>
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<td>Tsague, 2014</td>
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<td>B</td>
<td>Barriers to HCT</td>
<td>cross-sectional SMS survey; large sample size (15,228 total)</td>
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<td>18</td>
<td>Grabbe, 2010</td>
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<td>Quantitative</td>
<td>I</td>
<td>Uptake of HCT at semi-mobile, community-site mobile, fully-mobile, and stand-alone sites</td>
<td>retrospective cohort; large sample size (26,059 female)</td>
</tr>
<tr>
<td>19</td>
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<td>Tanzania, Zimbabwe</td>
<td>Quantitative</td>
<td>I</td>
<td>Uptake of VCT services</td>
<td>community randomized trial; large sample size (Tanzania: 1,249 female; Zimbabwe: 2,900 female)</td>
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<td>20</td>
<td>Kadede, 2016</td>
<td>Kenya</td>
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<td>B</td>
<td>Uptake of community or home-based HCT</td>
<td>community intervention; large sample size (98,694 total)</td>
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<td>21</td>
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<td>Quantitative</td>
<td>I</td>
<td>Acceptability and uptake of home-based testing</td>
<td>cross-sectional survey; large sample size (1,440 female)</td>
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<td>22</td>
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<td>Kenya</td>
<td>Quantitative</td>
<td>I</td>
<td>Uptake of home-based HCT</td>
<td>retrospective data analysis; large sample size (63,375 total)</td>
</tr>
<tr>
<td>23</td>
<td>Dancy, 2014</td>
<td>Malawi</td>
<td>Quantitative</td>
<td>I</td>
<td>HIV test in the past 12 months</td>
<td>quasi-experimental two group intervention design; small sample size (370 female)</td>
</tr>
<tr>
<td>24</td>
<td>Matthews, 2015</td>
<td>South Africa</td>
<td>Quantitative</td>
<td>I</td>
<td>HIV testing uptake within 12 months</td>
<td>randomized controlled trial; large sample size (3,451 total)</td>
</tr>
<tr>
<td>25</td>
<td>Mugo, 2015</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>I</td>
<td>Using referral coupon for HIV testing</td>
<td>in-pharmacy intervention; moderate sample size (706 female)</td>
</tr>
<tr>
<td>26</td>
<td>Njuguna, 2015</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>I</td>
<td>HIV testing within 6 months of follow-up</td>
<td>experimental SMS intervention, randomized by college; moderate sample size (600 female)</td>
</tr>
<tr>
<td>27</td>
<td>Geibel, 2015</td>
<td>Kenya</td>
<td>Quantitative</td>
<td>I</td>
<td>Recent HIV testing</td>
<td>randomized controlled trial; sample size unknown</td>
</tr>
</tbody>
</table>
Women aged 18 to 32 involved in the Project Accept intervention in South Africa who had children under their care during the baseline survey had higher odds of ever testing for HIV as compared with those with no children in an adjusted model (aOR 2.11; 95% CI: 1.55–2.88).218 Similarly, having ever given birth was significantly associated with ever testing for HIV among young married women aged 15 to 24 in Kenya (OR 2.79; 95% CI: 1.38–5.64), Zambia (OR 3.05; 95% CI: 1.90–4.91), and Zimbabwe (OR 2.30; 95% CI: 1.59–3.33).215

In a multivariate analysis of data from young mothers aged 15 to 22 in Malawi and Zimbabwe, no demographic, social, or attitudinal variables were significant predictors of HIV testing when an antenatal variable (p<0.001) was included in the model.217 The odds ratios indicate that, holding all other variables constant, when a young mother in Malawi is offered HIV testing during her antenatal visit, she is approximately 12 times more likely to get tested for HIV than one who is not offered testing; a young mother in Zimbabwe is 286 times more likely to get tested for HIV when offered the test as a part of her antenatal visit.

### 7.1.2 Studies 2, 3, 4, and 7: Knowledge of HIV and Testing Is Associated with HIV Testing among Female Adolescent Girls and Young Women

Some evidence indicates that knowledge of HIV, HIV treatment, and awareness of testing services is associated with increased HIV testing. In a multivariate analysis of data from young mothers aged 15 to 22 in Malawi, accurate understanding of HIV infection was significantly associated with HIV testing (aOR 1.165, p<0.05) in a model where antenatal testing was excluded from the model.217 At the bivariate level, AGYW aged 12 to 22 from Nairobi, Kenya, with high HIV knowledge, and those who believed that condoms prevent HIV transmission, were more likely to have ever been tested for HIV.216 This association was no longer significant in multivariable models. Among adolescents and young people aged 13 to 24 in Tanzania, exposure to VCT information from a VCT center was significantly associated with having been tested for HIV (aOR 5.65; 95% CI: 3.28–9.71).221 Women aged 18 to 32 in South Africa who reported a high awareness of the availability of ART to treat HIV had higher odds of reporting HIV testing (aOR 1.63; 95% CI: 1.17–2.26) as compared with those who had not heard of ART.218

Increasing knowledge of HIV and HIV testing appears to be an effective strategy for increasing testing. Multivariate modeling showed that female Kenyan secondary school students aged 13 to 20 were more likely to seek testing if they were knowledgeable about VCT (aOR 1.24, p<0.01).222 Female students who reported that HIV information was available in their schools were more likely to get tested for HIV. Those who reported having HIV activities in primary school (aOR 1.63, p<0.01), HIV activities in secondary school (aOR 1.21, p<0.05), or had a teacher with a counseling certificate recognized by the Ministry of Education (aOR 1.81, p<0.05) were more likely to have had an HIV test. School-level factors in this study had a greater influence on female than on male students.222
7.1.3  Studies 5, 8, and 9: Knowing Someone Who Is HIV Positive, Has Died of AIDS, or Has Tested for HIV Increases the Likelihood of Testing Among Adolescent Girls and Young Women

Experiences with HIV or knowing someone who has tested for HIV increases familiarity and knowledge of testing. Among high school students in KwaZulu-Natal, South Africa, aged 14 to 23, knowing someone who died from HIV (OR 2.75; 95% CI: 1.57–4.82) and those who knew a person who had tested for HIV (OR 5.27; 95% CI: 2.96–9.41) were significantly more likely to have tested for HIV themselves. In a multivariate model, knowing someone who had tested for HIV was significantly associated with testing for HIV (aOR 15.28; 95% CI: 5.16–45.23). In adjusted multilevel models of HIV testing among female secondary school students aged 13 to 20 in Kenya, HIV testing was significantly associated with believing that someone in their school has HIV (aOR 1.46, p<0.01). Similarly, among young men and women aged 18 to 24 in South Africa, knowing any people living with HIV, and knowing a person who had died from AIDS were associated with having tested for HIV (aOR 1.79; 95% CI 1.05–3.06). These results are supported by conversations in targeted group meetings with female high school students in South Africa, where students reported that caring for HIV-positive household members was among the reasons for engagement with HIV testing.

7.1.4  Studies 4, 5, and 11: Adolescents Girls and Young Women Are Motivated To Test for HIV Out of a Sense of Responsibility to Oneself, the Importance of Knowing One’s Status, and Planning for the Future

Young women aged 18 to 32 in South Africa were more likely than young men to want to know their HIV status (63.2% vs. 45.6%, p=0.000). Among adolescent females aged 15 to 19 in secondary schools in Malawi, the main reason provided for testing for HIV was wanting to know their status (87.1%). In focus group discussions, participants reported that young women may want to know their status to reduce anxiety after unprotected sex, to reduce apprehension about past sexual behavior, when they wanted to get married, or when they were ill and advised by doctors to get tested. That said, while a higher proportion of young women aged 18 to 32 in South Africa cited wanting to know their status as their main motivation for testing when compared with young men of the same age (74% vs. 51%, p=0.001), an even higher proportion of young women reported having children (100%) or “nonvoluntary” testing (self-defined, likely including PITC, routine antenatal testing, and testing for insurance purposes) (98%) among their reasons for testing.

Planning for the future, including marital aspirations, also motivates young women to want to learn their status. Among those accepting home-based testing and counseling in Kenya, which had higher acceptance rates among adolescents and young adults compared with older adults, planning for the future was overwhelmingly cited (84.9%) as their main motivation for accepting the service. Among unmarried non-pregnant young women aged
18 to 24 in Kenya, marital aspirations were significantly associated with HIV testing (hazard ratio [HR] 1.73; 95% CI: 1.04–2.88).\textsuperscript{227}

\section*{7.1.5 Studies 4, 5, and 7: Discussions about HIV or HIV Testing Motivate Adolescent Girls and Young Women To Be Tested for HIV}

Among women aged 18 to 32 in South Africa, those who reported ever having a discussion about HIV were more than three times more likely to have ever tested (aOR 3.36; 95% CI: 2.50–4.53).\textsuperscript{218} Among adolescents and young people aged 13 to 24 in Tanzania, participants who had discussed HIV testing with their sexual partners were 3.2 times more likely to test for HIV than those who had not (OR 3.2; 95% CI: 1.3–8.1).\textsuperscript{221} In multivariable analysis, young women and men aged 18 to 32 in South Africa who reported having ever talked to their mother or female guardian about HIV were significantly more likely to have tested (aOR 2.69; 95% CI: 1.61–4.55).\textsuperscript{219}

\section*{7.1.6 Studies 2, 8, 10, 13, and 14: Perceived Risk or Reported Sexual Risk Behaviors Are Correlated with HIV Testing Among Adolescent Girls and Young Women}

In bivariate analysis, female secondary school students aged 13 to 20 in Kenya were more likely to have been tested for HIV if they reported medium (1.54, p<0.05) or high risk perception (1.99, p<0.01).\textsuperscript{222} Similarly, in bivariate analyses, AGYW aged 12 to 22 from Nairobi, Kenya, who perceived a 50-50 chance of infection relative to low perceived risk were more likely to have tested for HIV.\textsuperscript{216} However, in both studies, risk perception was no longer significant in multivariate models.

Among pregnant young women aged 18 to 24 in Kenya, those who engaged in unprotected sex in the 6 months preceding were eight times more likely to report an HIV test (HR 8.34; 95% CI: 3.40–20.33). This may reflect the timing of pregnancy and antenatal care visits that occur in the first few months after a pregnancy has been established.\textsuperscript{227} Among young women participating in an HIV prevention trial, factors significantly associated with HIV testing using an opt-out strategy included sex with a casual partner in the past 12 months (OR 1.53; 95% CI: 0.98–2.37); this association was moderately significant in multivariate analysis (aOR 1.52; 95% CI: 0.96–2.38).\textsuperscript{228} One of the main reasons for testing reported during targeted group meetings with female and male high school students in South Africa was engaging in unprotected sex.\textsuperscript{224}

No articles were identified highlighting facilitators to linkage to care for adolescent girls and young women.
7.2 Primary Barriers to HIV Testing Services

7.2.1 Studies 2, 7, 8, 11, 12, 15, 16, and 17: Fear of HIV Testing, Learning One’s Status, and Implications for The Future Were the Most Commonly Cited Barriers to Testing Among Adolescent Girls and Young Women

Female students in Malawi aged 15 to 19 recognized that while HIV testing and knowing one’s status is important, there is a disadvantage to testing if one is found to be HIV positive. During focus group discussions, these young women elaborated that learning that one is infected would increase anxiety, decrease focus on their studies, and impact future plans.225

Multivariate modeling shows that female Kenyan secondary school students aged 13 to 20 were less likely to seek HIV testing if they reported being afraid to go to a VCT center (aOR 0.35, p<0.01).222 Nearly a quarter (23.0%) of young women reported that they were afraid to go to the VCT center, and 11.4% were unsure whether they were afraid to go.222

Nearly one-fifth (17.4%) of sexually experienced AGYW aged 12 to 22 living in slum settlements in Nairobi, Kenya, reported that they had not been tested because they did not want to know their status.216 Similarly, among young people aged 13 to 24 in Tanzania who had not tested for HIV, nearly a quarter (24.2%) reported anxiety and stress as a factor hindering VCT uptake.221

Among male and female secondary school students from two districts in South Africa, the most common response to open-ended questions about why they had not tested was fear of a positive result (17.2%).229 Older students also fear HIV testing: 45.3% of public and private university students in Kenya considered going for HTC to be extremely frightening.230 Among adolescents and adults refusing home-based testing and counseling in Kenya, fear of knowing one’s HIV status was the most frequently cited reason for refusal (17.4%).226 Young people aged 10 to 24 registered to the SMS platform Zambia U-report reported fear of a positive test result as the main barrier to HTC (65% of respondents aged 10 to 14, 83% of respondents aged 15 to 19, 84% of respondents aged 20 to 24).231

7.2.2 Studies 2, 7, 11, 15, 16, and 17: No or Low Perceived Risk Is A Commonly Reported Reason for Not Testing for HIV

AGYW aged 12 to 22 living in slum settlements in Nairobi, Kenya, listed not having ever had sex (43%) or not being at risk for other reasons (31.8%) as the primary reasons for not having tested for HIV.216 Noteworthy is that 44% of females who reported having had sex had not tested because they felt they were not at risk. Similarly, female secondary school students aged 15 to 19 in Malawi provided two major reasons for not testing: they were not sexually active and they did not perceive themselves to be at risk of HIV for other reasons.225
One-fifth (19.9%) of young people in Tanzania aged 13 to 24 who had not tested for HIV reported trust in their health as a factor hindering VCT uptake. After fear of positive results, secondary school students in South Africa listed no need for testing (16.5%), being sexually inexperienced (13.5%) and being convinced that they were HIV negative (14.8%) as the top reasons for not testing. Older students also did not perceive much risk for HIV, with most students (68.5%) surveyed at four universities in Kenya disagreeing with the statement “there is a possibility that I have HIV and AIDS”; and 59% of students disagreeing with the statement, “I may have had sex with someone who was at risk for HIV and AIDS.” Additionally, 39.9% of these students disagreed with the statement “I am at risk for HIV and AIDS”; with only 36.8% agreeing that they were at risk.

Among young people aged 10 to 24 responding to an SMS survey in Zambia, younger people aged 10 to 14 were more likely to report a lack of awareness of the importance of HIV testing (14%) as compared with older respondents (8% among respondents aged 15 to 19, 5% among respondents aged 20 to 24).

7.2.3 Studies 7, 8, 11, and 15: Adolescent Girls and Young Women Are Concerned about the Possibility of Experiencing Gossip and Negative Reactions for Testing, Particularly If They Are Found To Be HIV Positive

Some female Kenyan secondary school students reported that they could not go for HIV testing because others would think that they were HIV positive (12.8% agree, 9.6% do not know). In a multivariate model, those who agreed to this statement were significantly less likely to have been tested than those who did not agree (aOR 0.53, p<0.05).

Fear of stigma and discrimination upon testing positive was one of the barriers to HIV testing identified by female secondary school students aged 15 to 19 in Malawi, with some participants in focus group discussions saying that if they were found to be HIV positive their friends would not socialize with them, people would gossip, and the possibility of getting married would be diminished. Students also mentioned that some people assume that girls who go for HIV testing are morally loose. These young women also identified fear of parents’ reaction as a barrier to testing:

“This is because if we want to go for the test our parents shout at us, they say it means we involved ourselves in sexual activities, therefore it is a disgrace to them” (Participant, focus group discussion with 15- to 17-year-old girls).

Among secondary school students in South Africa, fear of gossip was also mentioned as a reason for being unwilling to test for HIV at school (9.7%). The same proportion (9.7%) of young people aged 13 to 24 in Tanzania who had not tested for HIV reported fear of stigmatization as a factor hindering VCT uptake.
7.2.4 Studies 6, 7, 10, 15, and 16: HIV Testing Sites Are Not Adolescent Friendly, Leaving Young People with Concerns about Confidentiality, Discomfort Disclosing Information to Counsellors, and Difficulty Accessing Services

Male and female students in secondary schools in South Africa reported that the major barriers to current sexual and reproductive health services (including HTS) as discomfort in communication with adults, lack of adolescent-specific services, cost implications of travel to clinics, incompatibility of school and clinic open hours, and concerns about confidentiality, specifically with regard to personal connections to clinic staff.\textsuperscript{224}

Only half (49.9\%) of older students from four public and private universities in Kenya felt that health providers could be trusted with their counseling and test information, and 47.9\% did not feel that they could comfortably talk to a counselor about personal behaviors that might put them at risk for HIV infection.\textsuperscript{230}

Among young people aged 13 to 24 in Tanzania, 95.7\% rated distance among the factors influencing testing uptake. Those who reported that a VCT center was nearby were 60\% more likely to test than those who rated it as far (OR=1.6; 95\% CI: 1.0–2.5).\textsuperscript{221} Knowledge of where testing services are available is a barrier for young people as well, with 11.9\% of secondary school students in South Africa listing not being sure where to go for HIV testing among the main reasons they had not been tested.\textsuperscript{229} Distance may also be a contributing factor in a study of adolescents aged 10 to 17 participating in a prospective survey in South Africa, which found that the main barrier to HIV testing for females was residence (OR 0.62, p<0.005).\textsuperscript{220}

Even when services are brought to locations that are considered more adolescent friendly, not all adolescents are comfortable with being tested. In a study about the acceptability of HIV testing in schools among secondary school students in South Africa, 24.3\% of female students and 33.0\% of male students reported that they would not be willing to test at school.\textsuperscript{229} The main reasons for this included being scared to test at school (23.5\%), school was not the right place for HIV testing (14.4\%), an unwillingness to be tested (9.7\%), fear of gossip (9.7\%), and lack of privacy (9.1\%).\textsuperscript{229}

No articles were identified highlighting barriers to linkage to post-test services for AGYW.

7.3 Strategies Used To Improve HIV Testing Services for Adolescent Girls and Young Women

There is a paucity of published interventions that reported on strategies to increase uptake of HIV testing among AGYW that met the criteria for inclusion. No articles were identified which reported on interventions to increase linkage to post-test services specific to AGYW.
7.3.1 *Studies 18, 19, and 20: Community and/or Mobile HIV Counseling and Testing Reaches a Higher Proportion of Young People than Facility-based Modalities*

In a retrospective cohort study comparing standalone HCT with three approaches to providing mobile HCT in Kenya, data were collected from six standalone HCT centers from different geographic areas that also offered a mobile HCT option. Data were assessed for 62,173 HCT clients of all ages. The mobile HCT approaches were divided by type: community-site mobile HCT, fully-mobile truck HCT, and semi-mobile container HCT. Semi-mobile container HCT consists of a shipping container converted into counseling rooms and laboratory space that is hauled to each site and placed in a community for 7 to 10 days at a time. Age and gender distribution were similar for standalone and mobile HCT; however, mobile HCT attracted a greater proportion of new testers. The three semi-mobile HCT containers served a significantly higher proportion of female clients of all ages (61.9%; 95% CI: 61.2–62.7) when compared with standalone HCT (40.5%; 95% CI: 39.7–41.3), community-site mobile HCT (45.9%; 95% CI: 45.2–46.6), and fully-mobile truck HCT (52.0%; 95% CI: 41.0–42.9%). Semi-mobile container sites also served a significantly higher proportion of young people aged 15 to 24 (51.2%; 95% CI: 50.4–52.0) when compared with standalone HCT (42.1%; 95% CI: 41.3–42.9), community-site mobile HCT (43.1%; 95% CI: 42.4–43.8), or fully-mobile truck HCT (45.1%; 95% CI: 44.1–46.1). In addition to serving a higher proportion of female and young clients at these sites, they reached a larger population overall, and all mobile approaches were found to compare favorably with standalone HCT in terms of cost per client and effectiveness for reaching key target populations.

Project Accept is a multisite, community randomized trial of an intervention that includes community mobilization activities, easily accessible mobile VCT, and community-based post-test support services, with a target population of young people aged 16 to 32. An evaluation of Project Accept found that among the 10 communities in Tanzania, approximately four times more clients in intervention communities utilized VCT services than in the control communities (2,341 vs. 579, respectively). In the 8 communities in Zimbabwe, VCT uptake in intervention communities was nine times greater than control communities (5,437 vs. 602). In addition to reaching many more clients, the mean client age was lower among those testing in intervention communities compared with control communities: 22.7 years vs. 23.8 years in Tanzania (p<0.001), and 22.2 years vs. 24.2 years in Zimbabwe (p<0.001). In particular, while testing among adolescents aged 15 to 17 was still infrequent, it was significantly higher in intervention communities as compared with control communities: 15.8% vs. 8.5% in Tanzania (p<0.001) and 21.7% vs. 8.2% in Zimbabwe (p<0.001). While this intervention showed improved testing uptake among young people, a larger proportion of clients in both intervention and control communities were male, and there were no significant gender effects between intervention and control communities. The prevalence of HIV was lower among intervention community members than control
communities; however, because many more people were tested in intervention areas, far more cases were detected in intervention communities: over twice as many in Tanzania (86 vs. 40, \(p<0.001\)) and over five times as many in Zimbabwe (693 vs. 132, \(p<0.001\)). Finally, an estimated 37% (2,341/6,250) of residents aged 16 to 32 in intervention communities received at least one HIV test, compared with only 9% (579/6,733) in control communities. In Zimbabwe, this difference was even more pronounced, where an estimated 51% of young people in intervention communities tested for HIV as compared with only 5% of residents in control communities.

In rural western Kenya, a hybrid testing strategy of 2-week multi-disease community health campaigns that included HTS, followed by home-based testing among those who did not participate in the campaign resulted in high coverage of HIV testing (88%) among adolescents and young people aged 15 to 24. Testing coverage was 86% among those aged 10 to 14, 90% among those aged 15 to 17 years, and 88% in those aged 18 to 24.


An assessment of home-based testing and counseling (HBTC) in rural western Kenya (Lwak) and an informal urban settlement in Nairobi (Kibera) found that HBTC implemented by trained lay counselors was an effective strategy for achieving high coverage of testing among people of all ages and reaching people with previously undiagnosed HIV infection. The intervention utilized community mobilizers to set up appointments for HBTC and introduce counselors to participants. While this program was not specifically focused on AGYW, acceptance of HBTC was high among females aged 13 to 17 (90.8% in Kibera, 84.2% in Lwak) and among females aged 18 to 24 (89.0% in Kibera, 79.6% in Lwak). Nearly two-thirds of participants had never been tested for HIV before.

A program offering home-based VCT to all participants in a population-based HIV survey conducted in select urban and rural areas of Zambia found high acceptability of VCT when offered in the home, particularly among young people. Participants were asked if they were willing to test for HIV in their home or another convenient location; and if willing, they were followed up by trained counselors. Overall, 31.6% of participants were willing, including 29.7% of young women aged 15 to 24, with a 74.6% receiving their result. Acceptability was slightly higher among young women who had not ever tested (75.8%) compared with those who had previously been tested (70.6%). Overall, acceptability was higher in rural as compared with urban areas (83.6% vs. 70.7%). Before home-based VCT was offered, very few adolescents aged 15 to 19 had been tested (7.8% in urban areas; 5.3% in rural areas). Following the intervention 28.6% of urban adolescents and 25.1% of rural adolescents had tested. Among young people aged 20 to 24, the proportion increased from 23.1% before to 45.4% after in urban areas, and 13.3% before to 40.2% after in rural areas.
areas. Offering a home-based model of testing and counseling not only increased testing overall, it had substantially reduced differences in testing rates by gender, residence, and educational attainment—particularly among young people in rural areas, where there is an unmet need for VCT.

The Academic Model Providing Access to Healthcare (AMPATH) program provided home-based HCT on a large scale across Western Kenya. Trained counselors conducted home visits and offered HBCT to all consenting individuals aged 13 or older. A retrospective study of AMPATH HBCT between November 2009 and January 2012 in the Burnt Forest, Chulaimbo, Teso, Port Victoria, and Kapsaret catchment areas found very high testing uptake. Testing was highest among adolescents aged 13 to 18 (99.1%) and young adults aged 19 to 24 (98.3%) as compared with older adults (93.9%) (p<0.001). Overall, females were more likely to accept testing than males (aOR 1.08; 95% CI: 1.02–1.15), although this was primarily among adults. Among young adults, females were less likely to accept testing (aOR 0.69; 95% CI: 0.65–0.73), and there was no difference by gender in adolescent testing. Those who had previously tested for HIV were less likely to accept testing, which may explain lower testing uptake among young adult women who have higher population-wide testing rates.

7.3.3 Studies 10, 15, 23, and 24: In-school/Community Programs for Adolescents Can Increase Knowledge and Testing, and School-based Testing Is Acceptable to Adolescent Females

A quasi-experimental evaluation of the Mzake ndi Mzake Kuunikira Achinyamata (MMKA) intervention determined that it was effective in enhancing 13- to 19-year-old Malawian youths’ HIV knowledge; attitude about HIV; self-efficacy for condom use and safer sex; and HIV risk reduction behaviors, including HIV testing. MMKA was developed with adolescents, their parents, and community leaders to provide extensive behavioral skill building, emphasizing decision-making, refusal, and assertiveness skills through seven weekly 2-hour sessions. In addition to dividing youth by gender, sessions were also separated into mid-adolescence (aged 13 to 15) and late-adolescence (aged 16 to 19) to allow content to be developmentally tailored. During post-intervention interviews, adolescents in the MMKA community were more likely to have received an HIV test in the past 12 months (13.54% vs. 6.62%, p<0.01). In particular, older adolescent females aged 16 to 19 in the MMKA community were 3.5 times more likely than those in the control community to have tested for HIV in the past 12 months (23.94% vs. 4.65%, p<0.01). Among younger adolescent females aged 13 to 15, there was no significant difference in HIV testing in the past 12 months (3.36% vs. 0.96%).

The Centre for the AIDS Programme of Research in South Africa (CAPRISA) sexual and reproductive health (SRH) pilot provided information and awareness sessions aimed at developing a framework for the introduction of SRH services for adolescents into schools in
rural KwaZulu-natal, South Africa. The three-tier program was implemented in 14 rural schools, with a population of 6,415 students in grades 9-11 and age range of 12-28 years. Tier 1 included in-school group SRH information and awareness sessions, Tier 2 included in-school individual SRH counseling and HIV counseling, and Tier 3 included referrals to in-school fixed, in-school mobile or public sector SRH clinics. A total of 2,795 students (44%) attended individual counseling sessions, of whom 52% were female. Among participants, 71 students tested positive for HIV and were referred to Tier 3 services; of these, 59 (83.1%) were female. There was considerable variation in uptake of services between schools (ranging from 19% to 96%); delineating the causes of school-level variation will be critical in optimizing future implementation strategies.

A formative evaluation of HTC at schools in Gauteng and North West provinces in South Africa found high acceptability. Over three-quarters (76.9%) of 2,970 students in grades 10 to 12 participating in a survey at 17 public high schools (9 from rural and 8 from urban districts) agreed that having HCT in school was a good idea, and 71.8% reported willingness to undergo HCT at school. A moderately higher proportion of adolescent women as compared with adolescent men (78% vs. 75%) thought that having HTC at school was a good idea, and a significantly higher proportion of young women (76%) as compared with young men (67%) were willing to use HTC services at school (OR 1.56; 95% CI: 1.32–1.82).

An evaluation of PREPARE, a multicomponent school-based HIV prevention intervention to delay sexual debut, increase condom use, and decrease intimate partner violence among young adolescents in grade 8 (mean age 13.7 years) in South Africa found no significant difference in self-reported HIV testing in the past year between intervention (28.5%) and control (20.0%) (OR 1.44; 95% CI: 0.90–2.32). The intervention included 21 interactive after-school group sessions led by a trained facilitator. Mean attendance was 8 sessions.

Additional support for school-based HIV testing campaigns comes from a prospective survey of adolescents aged 10 to 17 in South Africa. Of those surveyed, 22.8% reported participating in school-based campaigns for testing, and among those reporting sexual experience, exposure to school-based HIV testing campaigns was strongly associated with VCT among females (OR 7.78, p<0.001) and males (OR 14.85, p<0.001).

**7.3.4 Study 25: Young Adult Clients Can Be Engaged in HIV Screening Through Pharmacy Referral**

Pharmacy workers at five pharmacies in the Mtwapa area of Coastal Kenya were requested to target clients aged 18 to 29 purchasing medicine for referral to free HIV testing and screening for acute HIV infection (AHI) study. Of the 1,490 clients offered referral coupons for testing and study inclusion screening, 1,074 (72.1%) accepted referral coupons, and 377 (25%) reported for screening at study clinics, of whom 343 (24%) were tested. Among young people aged 18 to 24, 22% of those targeted were tested, with no difference
between the proportion of males and females who were tested. Among those tested, a quarter had not tested in the past year.239

### 7.3.5 Study 14: Opt-out Strategies Are More Successful Than Opt-in Strategies for Uptake of Voluntary Counseling and Testing among Young People Participating in an HIV Prevention Trial

A cross-sectional survey was used to evaluate the long-term impact of the MEMA kwa Vijana adolescent sexual and reproductive health intervention 9 years after it was implemented. Young people who had attended at least one year of grades 5–7 in a trial community between 1999 and 2002 were invited to participate in a survey and VCT (using either an opt-in or opt-out strategy). Participants ranged in age, with 85% under age 25. Overall, VCT uptake was significantly higher among participants offered the opt-out strategy than those offered opt-in testing (90.9% vs. 60.4%, p<0.001). Among females, uptake was higher in the opt-out strategy for all age groups, including <21 (90.9% vs. 60.0%), 21 to 22 (89.0% vs. 58.6%), and 23 to 24 (92.3% vs. 62.4%).228

### 7.3.6 Studies 26 and 27: Text Messaging and Other New Media Can Improve HIV Testing Uptake among Adolescent Girls and Young Women

In a quasi-experimental study among women aged 18 to 24 who had not tested for HIV in the past 12 months, a weekly SMS on HIV-related topics with an option to text back for more information showed increased HIV testing among the intervention group over 6 months of follow-up.240 Young women at four technical schools were cluster randomized by school to receive the SMS intervention or to receive no messages. A total of 355 women out of 600 enrolled reported testing for HIV within the 6 months of follow-up: 67% among the intervention group and 51% among the control group. In an adjusted model, this represented a 52% increase in reported HIV testing among women in the intervention arm (aOR 1.52; 95% CI: 1.17–1.98).

An assessment of an intervention aimed to enhance the impact of Shuga, an HIV prevention-focused television drama targeting young people in Kenya, found that facilitated viewings resulted in substantial increase in HIV testing.241 To enhance the impact of the program themes and messages, screenings followed by facilitated discussion were implemented in two locations with a cohort of young people aged 15 to 24, and the impact of the community-level intervention was assessed. Recent HIV testing (in the past 5 months) was significantly associated with increased exposure to the television series in both the comparison non-facilitated group (p=0.024) and the intervention group (p=0.010). Participants in the intervention group who attended five or more facilitated sessions reported an increase in recent HIV testing from 48% at baseline to 62% at follow-up (p=0.016).
7.4 Ongoing Research and Programming

7.4.1 Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe Women (DREAMS) Initiative

DREAMS is an ambitious $385 million partnership to reduce HIV infections among AGYW in 10 Sub-Saharan African countries, including all 6 of the focal countries for this review (www.pepfar.gov/partnerships/ppp/dreams). DREAMS is delivering a core package that combines evidence-based approaches that go beyond the health sector, addressing the structural drivers that directly and indirectly increase girls’ HIV risk, including poverty, gender inequality, sexual violence, and a lack of education. The package includes:

- Adolescent friendly sexual and reproductive health services:
  - Condom promotion and provision
  - PrEP in a subset of females
  - Addressing gender-based violence
  - HTC for AGYW and male partners
  - Expand contraceptive method mix
  - Girl-centered programming

- Strengthening the community:
  - School- and community-based HIV prevention education
  - Community mobilization/norms change for community leaders, boys, and men

- Strengthening family:
  - Parenting and caregiver programs
  - Social protection (cash transfers, educational subsidy, combination socioeconomic approaches) for vulnerable AGYW

- Decreasing risk in sexual partners:
  - Target ART and VMMC services

A wide array of research and programming is taking place under the DREAMS initiative, which varies by country and setting, with most having a component addressing HIV testing and linkage. Some projects under DREAMS are currently being implemented, others are in various stages of development, and there have been funding calls for further work under this initiative. Two example projects under this initiative are provided below.

The Sauti Program (Tanzania)

The Sauti program is described in the chapter on FSW. Under the DREAMS initiative, this project offers HIV testing and a range of other health services to vulnerable adolescent girls aged 15 to 24 (as well as MSM and sex workers). Services include HIV testing and a broad range of other clinical services, outreach, curriculum-based activities, gender-based violence
support groups, savings and loan groups, and legal assistance. Sauti is in the process of developing a Young Women’s Vulnerability Index, which will be used to identify girls at highest risk of HIV transmission. Based on their level of risk, girls will then be directed to appropriate Sauti services.

**Young Sisters Program (Zimbabwe)**

This project has been described in detail in the chapter on FSW. In brief, nested within Zimbabwe’s National Sex Worker Programme, *Sisters With a Voice*, is the “Young Sisters” program, a DREAMS-funded program targeted to high-risk AGYW who sell sex. The program focuses largely on HIV prevention, including a program to promote routine testing. Self-testing, based on the evidence from an ongoing self-testing study among sex workers in Zimbabwe (see below), may be integrated into the Young Sisters program. This program is evidence-based, follows WHO and UNAIDS guidelines for programming for young women who sell sex, and was developed in collaboration with young women who sell sex in Zimbabwe. The program was pilot tested in three sites in 2014, and will now be refined and expanded to six sites through DREAMS.

**7.4.2 Self-testing Initiatives among Adolescent Girls and Young Women**

**Innovations in HIV Testing to Enhance Care for Young Women and Their Peers and Partners.** A study among young women aged 18 to 24 in South Africa has been initiated to improve HIV prevention and care through expanding HIV testing options to include self-testing for young women, their peers and their sex partners, and by facilitating linkage to care (PI Kathleen Kahn). The study includes a formative phase where focus groups discussions will be conducted to understand perceptions of HIV testing and HIVST in the study population. Then observed HIVST will be conducted to better understand any challenges with self-testing and the materials needed to make the process clear. In the second phase of this research, investigators will carry out a randomized controlled trial of approximately 400 young women to receive either their choice of HIVST or clinic-based HCT. Once young women have been randomized, they will be asked to recruit up to two male sex partners and two peers to test with the method of their randomization group. The aims include evaluating whether young women offered a choice of HIVST will test at a greater rate than young women offered HTC only; increasing early detection; determining whether utilizing young women’s social and sexual networks to reach peers and male sex partners with HIV self-testing or clinic-based HCT will increase uptake of testing among young people; increasing detection of previously undiagnosed infections; and for those that test HIV positive and return to the study, examining the uptake of linkage to care and exploring barriers and facilitators to linkage.
7.4.3 3IE-Funded Self-testing Research

In Zambia, embedded within the PopART trial is a 3IE-funded project to explore the effect of oral HIVST door-to-door distribution via community health workers on uptake of testing among adults and adolescents. This is a cluster randomized trial comparing self-test distribution with standard home-based HIV test administered by a community health worker. The study does not target adolescent girls specifically, rather all adolescents regardless of gender.

7.4.4 Other Completed Self-testing and Home-based Testing Studies

Though these studies did not meet the inclusion criteria for our systematic review, some notable research has been conducted on HIVST that is worth highlighting here. None of these studies specifically targeted AGYW, but nonetheless provide some insight into potential testing strategies for this population. The first was a large community-randomized study of HIVST distribution by community health workers, conducted in Malawi. Overall, 14,004 (crude uptake 83.8%, revised to 76.5% to account for population turnover) residents self-tested during months 1–12, with adolescents aged 16 to 19 most likely to test. In fact, crude uptake in some age-sex-neighborhood subgroups (notably among adolescent women aged 16 to 19) exceeded population denominators from the census conducted in the year preceding the study in both months 1–12 and 13–24.242

A review of different modalities of community- and facility-based testing, self-testing at home reached the highest proportion of young adults. Both home-based and mobile testing reached young adults better than clinic-based testing. Community testing with facilitated linkage (for example, counselor follow-up to support linkage) achieved high linkage to care (95% linked to care; 95% CI: 87–98%) and ART initiation (75% initiated ART; 95% CI: 68–82%) among all populations, but was not stratified by young adults or young women specifically.243

Finally, in a study of a home-based HTC program (not self-testing) in western Kenya, 99.1% of adolescents accepted testing and 98.3% of young adults accepted testing. In younger adults, females were less likely to test than males overall (aOR: 0.69; 95% CI: 0.65–0.73).236

7.4.5 Other Research and Programming

Zimbabwe Study for Enhancing Testing and Improving Treatment of HIV in Children (ZENITH)

Ongoing research in Harare, Zimbabwe, is investigating whether a package of services at the primary-care level will adequately meet the needs of vertically HIV-infected children and adolescents, or alternatively whether further decentralization to provide community-level HIV testing and/or treatment support is required (PI Rashida Ferrand). This is a household-level cluster-randomized trial of an adherence support intervention for older children. As a
preliminary phase of this study, all children aged 6 to 15 attending for acute care at primary health clinics will be routinely offered HIV testing (i.e., provider-initiated testing and counseling [PITC]) during a 2-year period. An HIV prevalence survey of children in the catchment areas of these clinics will be conducted after 2 years of the PITC intervention. This will not only provide data on community prevalence of HIV by age (which thus far is unavailable), but will also provide an indication of the effectiveness of primary care-based PITC through an estimate of undiagnosed HIV.

**Gender-Specific Combination HIV Prevention for Youth in High-Burden Settings (MP3-Youth)**

The MP3-Youth project targets male and female youth aged 15 to 24 in Western Region, Kisumu county Kenya (PI Ann Kurth). This program is providing combination HIV prevention services available at mobile events in the community, including HTS. Enrollment will comprise 1000 participants, with follow-up for one year. The primary outcome is to determine the number of participants who choose different HIV prevention services in the combination package. A combination of mobilization strategies are being used, including use of a public address (PA) system, door to door, fliers, and visiting youth groups and places where young people frequent. Participant follow-up for this study ended April 15, 2016, and analysis is ongoing.

**Tsima—Treatment as Prevention**

In Mpumulanga, South Africa, a cluster randomized trial is underway with Sonke Gender Justice, the University of Witwatersrand, and Right to Care looking at community mobilization to increase testing, linkage, and retention in care with a key focus on men (www.genderjustice.org.za/community-education-mobilisation/tsima-treatment-as-prevention). Embedded within this trial, led by the Population Council and SOAR, is work focusing on increasing engagement of young women in testing, linkage, and care services. Single-sex, female-only groups will receive training in topics such as gender norms, gender-based violence, HIV transmission, prevention and treatment as prevention, stigma, and others. It is expected that one group will operate in each of eight intervention villages at any one time. Each group will meet for 2 hours, once every other week for 10 to 12 weeks. Participants will be young women aged 18 to 24, or 18 to 30, with approximately 15 to 20 young women per group. After 6 months, a new set of eight groups will start. Consequently, after three cycles, a total of up to 480 young women would be reached through this platform.
7.5 Discussion

7.5.1 Strategies for Improving HIV Testing Uptake and Linkage to Care for Adolescent Girls and Young Women Based on the Barriers/Facilitators Identified Above

Figures 7-2 and 7-3 summarize the barriers and facilitators to HTS identified in this review. From our review, HIV testing offered during antenatal care was the primary driver of HIV testing among AGYW in Kenya. This underscores the importance of ensuring that pregnant adolescents are accessing antenatal services, and that programming during these services is geared toward younger women as well as adults. It also emphasizes that testing offered in conjunction with other services that adolescent may engage in is a reasonable way to engage young women in testing. PITC (or “opt-out” testing) during other healthcare visits, or integration with family planning or other sexual and reproductive health services, could be key strategies for improving testing in young women.

HIV knowledge, personal experiences with HIV-infected people, and awareness of their own risk for HIV are also major drivers of HIV testing in this population. Young people often do not perceive themselves to be at risk, even when sexually experienced. Educational campaigns aimed at helping young people understand that having unprotected sex with a partner of unknown HIV status is a risk factor for HIV infection does not seem to be a message that has been internalized by many young people. Consequently, programmatic efforts to enable young people to accurately assess their risk level based on prior behavior may lead to increased utilization of HTC services. If young people are not sufficiently aware of their own risk, the role of providers and other influential adults in encouraging testing becomes even more important. Indeed, young people who had discussed HIV with a mother or female guardian were more than twice as likely to have been tested for HIV.

One of the motivating factors for testing among AGYW is a sense of responsibility to oneself, and planning for the future; fear of the implications for the future if one is found to be HIV positive is also one of the barriers to testing. This requires young people to be thinking about the future, planning for the future, and hopeful about the future. This can be a challenge in resource-poor settings, particularly when future prospects seem limited. Young people in general are often present-biased, and presenting ideas about future consequences of current behavior can be a challenge.

Fear of HIV testing itself, of being found to be positive, or of the possibility of experiencing gossip and negative reactions are the primary barriers to testing among young people. Community campaigns to reduce fear and HIV-related stigma, and training of providers to be nonjudgmental may help to attenuate these fears. By making HIV testing more adolescent friendly, improving access, and making HIV testing more normative, fears and
Figure 7-2. Barriers to Testing and Linkage: Adolescent Girls and Young Women

- Age of consent for HIV testing, and for sexual activity
- Fear of a positive test result
- Fear of testing or attending the clinic
- No or low perceived risk
- Fear of stigma, discrimination, or gossip
- Lack of adolescent friendly testing sites (cost, trust in providers, comfort discussing behavior, confidentiality)
- Clinic access (distance, cost of travel, incompatible open hours)
- Fear of gossip and impact on friendships or future relationships

Figure 7-3. Facilitators to Testing and Linkage: Adolescent Girls and Young Women

- Community and/or Mobile HCT
- Home-based HCT
- School-based HCT
- In-school or community awareness programs
- Provider-initiated testing
- SMS or media
- Self-testing
- Experiential knowledge of someone who is HIV+, has died of AIDS, or has tested for HIV
- Planning for the future (marriage)
- Discussions about HIV
- Knowledge of HIV and HCT
- Sense of responsibility to oneself and planning for the future
- Perceived or reported sexual risk
stigma could be reduced. Support from family, peers, and social networks may help increase testing, and youth identified that having community advocates for testing and the normalization of living with HIV would help improve attitudes toward testing.\textsuperscript{244}

Access for adolescents could be improved by engaging them in areas where they are most comfortable (schools and social gathering spaces) and increasing the number of testing sites, including community-based testing options. School-based programs showed increases in HIV testing\textsuperscript{224,237} and were found to be acceptable to female students.\textsuperscript{229} Integrating services into schools has been promising for other sexual and reproductive health services, and could reach a large number of young people, but it does not address the needs of out-of-school adolescents who may have dramatically different risks and needs when it comes to HIV testing. HIV incidence is typically highest in out-of-school youth.\textsuperscript{245}

Community-based programs, particularly mobile testing and home-based testing, were highly acceptable to young people. These strategies may reduce some of the burden they face when trying to access static testing sites, including hours that are incompatible with school attendance, locations that are difficult/expensive to access, and clinic costs.\textsuperscript{232,233} Home-based testing and counseling appears to be an effective strategy for achieving high coverage of testing, reaching people with previously undiagnosed HIV infection, and reducing inequalities faced by young people, especially those in rural areas.\textsuperscript{226,235,236}

No matter where services are accessed, it seems clear that youth-friendly services delivered by staff trained to meet the needs of young people may be beneficial for increasing testing. Providers should be nonjudgmental and supportive of testing, and all services should ensure confidentiality. When possible, having separate waiting areas for youth may increase their comfort in testing, and having services offered by adults from outside of the community may ease concerns about confidentiality.

Finally, though the evidence is limited, mobile technology and other media may be a useful way to increase HIV testing\textsuperscript{240,241} and to gather information and elicit feedback from young people.\textsuperscript{231} Workshops conducted by WHO with adolescents and young adults aged 15 to 29 in the Philippines, South Africa, and Zimbabwe identified the greatest barrier to testing for all participants was fear—of the process, of the result, of their parents’ reactions, and of the impact on their future lives. Another main barrier identified was the potential to experience stigma and discrimination. Finally, participants agreed that the lack of testing facilities is a barrier, with regard to location, costs, long waiting times, and limited hours of operation. Despite these barriers to testing, participants recognized the benefit of testing and knowing their status, and many mentioned a sense of responsibility to themselves or partners as motivation for testing. Many participants found that being offered testing while engaging in other health services was a useful motivator to testing, along with starting a new relationship and encouragement from others.\textsuperscript{244} These themes all align with the facilitators and barriers to testing identified in this literature review.
The WHO workshop participants and survey respondents made the following recommendations for improving access and uptake of HTC by adolescents: engaging the community to raise awareness and make testing less scary; training health service providers to be respectful, accepting, friendly, understanding, and supportive so that adolescents can relate to the person providing HTC; improving the HTC service delivery environment by creating a youth-friendly atmosphere, flexible hours, separate waiting areas for adolescents, alternative service delivery settings (schools, social centers, mobile services), and the assurance of confidentiality which might include an option of self-testing; and addressing structural barriers by increasing the number of testing sites to increase capacity and improve proximity, reducing fees and other costs of testing, and strengthening referrals from community organizations and health clinics.

Service providers reported to WHO that the following strategies should be used to improve access and uptake of HTC by adolescents: education to increase awareness; adolescent-friendly testing environments; involving adolescents in the design and delivery of services; and clarification of legal issues, especially with regard to consent for testing. Additionally, addressing laws and policies that prevent adolescents from testing—including age of consent for partnered sex, age of consent for testing, and age of consent for HIV medical services—will likely have important implications for adolescent engagement in HTS.

The WHO guidelines related to adolescent HTC explicitly note the importance of linkages to prevention, treatment and care, but no published literature was identified that addressed improving linkage to care for adolescents. Overall, for both testing and linkage, research concerning interventions specifically addressing female adolescents has not been prioritized and there are major gaps in the existing research. In general, there is a lack of research published on adolescent-female-specific programs. Programs in the published literature that do include AGYW often fail to break out data by age and/or gender. What little data is available for this population frequently encompasses females ranging from 10 to 24 years of age, without enough focus on the specific needs based on age as youth transition through adolescence to adulthood.

From our work with key informants, ongoing research and programming is largely incorporating the evidence base, with a number of combination programs that attempt to address barriers identified in this review. The ambitious DREAMS initiative represents the most notable of these efforts. Though not designed uniquely to promote uptake of HTS, the core package of services being implemented targets structural barriers that may reasonably have an impact on testing and linkage among adolescent girls. A notable project in Kenya, MP3-Youth, holds promise in its incorporation of both supply- and demand-side interventions. This project is using a variety of promotion and media tools to generate demand for HTS, and is making testing and linkage services available using a community-based strategy. In Zimbabwe, the ZENITH study was the only project identified that focused specifically on younger children and adolescents, perhaps capturing undiagnosed vertical
infection. This project will use PITC to target children aged 6 to 15 who present at acute care facilities.

In terms of novel testing strategies, evidence suggests that HIVST is highly acceptable among adolescents and young people. This may be because it is able to address a number of identified barriers, including confidentiality, logistical constraints, stigma, and negative reactions by healthcare providers. Impressive evidence has come out of Malawi, where virtually all adolescents aged 16 to 19 tested annually over 2 years via self-testing. Important self-testing research is underway in Zambia and South Africa. In particular, South Africa will be investigating important questions around distribution methods and how best to facilitate linkage to post-test services, which currently represent gaps in the evidence base. Other gaps related to self-testing among adolescents include accuracy of self-testing in the hands of adolescents, and how instructions can be developed to optimize accuracy; how and where young people prefer to test (alone, with a friend or partner, at home versus at a clinic or other location); whether they are willing and able to disclose their results to partners and providers; and whether or not they will link to post-test services.

7.5.2 Recommendations

Based on the findings for AGYW, the following recommendations can be made:

- Routinely disaggregate data by age and gender, in order to evaluate and interpret the impact of HTS research and programming on AGYW.
- Because it is one of the primary drivers of HIV testing among AGYW, facilitate and ensure that this population has access to antenatal care and postpartum care services.
- Utilize strategies that address structural barriers and facilitators to HTS among AGYW, including addressing policies that limit access to these services, reducing stigma in communities and by providers, creating youth-friendly services, and cultivating a sense of hope and optimism about the future, among other structural factors.
- Utilize strategies that increase knowledge in AGYW that promote and increase demand for HTS, including knowledge of HIV risk, information on location of testing facilities, and where to go for post-test care, among other topics.
- Utilize community-based testing strategies that are provided at times and locations convenient for AGYW to attend.
- Conduct research and programming on how best to facilitate AGYW’s linkage to appropriate post-test services, as virtually no evidence has been generated to guide best practices for linkage among AGYW.
- Conduct research on incorporating mobile technology and social media for demand creation and to facilitate testing and linkage—although the evidence-base is limited, young people are avid users of mobile technology and social media, and evidence to date suggests these avenues hold promise for this population.
- Conduct research on HIVST as a potentially promising strategy to increase uptake of HIV testing among AGYW.
8. MEN

Historically, men have had lower rates of routine HIV testing than women, and without promoting men in a more meaningful manner in HTS, it will be difficult to meet the UNAIDS 90-90-90 treatment target. Women have largely been the focus of HTS in Sub-Saharan Africa, with men confined to more of a supportive role. HIV testing has been successfully scaled up for women in antenatal care services, without much cognizance of the needs of men. In some respects, this has created an environment where HIV testing, and the clinics where this service is provided, has been seen as a female domain. Without actively addressing this disparity, we risk compromising global goals around HIV elimination.

Our literature search identified 208 review articles. Title and abstract review excluded 185 citations and full-text review excluded an additional 11 citations. Twelve published review articles of original research met the inclusion criteria. An additional 4 citations from the gray literature were included in our review (Figure 8-1). Of the published reviews presented, eight focused specifically on Sub-Saharan Africa, one focused on low- and middle-income countries, and two did not limit their focus geographically. More notable is that only one review focused specifically on men as the primary population.246 Other reviews included broader populations (e.g., all adults), with men being only one segment of the population. Only those results that were disaggregated for men are presented here. Citations included in this review are listed in Appendix E, Table E-5 and summarized in Table 8-1.

Primary Barriers and Facilitators to HIV Testing and Linkage to Post-Test Services for Men

8.1.1 Studies 1, 2, and 3: Masculine Norms Inhibit Men’s Use of Healthcare

Inherent in most of the literature around male engagement in HTS is the idea that men have more limited utilization of healthcare in general.247 Unpacking this barrier further, several reviews cite norms around masculinity as contributing to this trend.171,246,248 These norms conflate a sense of strength with health, thus linking health seeking behavior and facility attendance with weakness. This perception is also said to be associated with several consequences, including diminished respect in the community and reduced marriage opportunities,171,248 as well as straining existing marital relationships.248 One review noted a sense that healthcare facilities are viewed within the female domain, furthering their feminization, and thus creating the sense that they are not a place where men should be.248
Figure 8-1. Flow Diagram of Study Selection Process

![Flow Diagram of Study Selection Process](image.png)
Table 8-1. Summary Table of Study Inclusion and Quality for Men

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author</th>
<th>Country</th>
<th>Study Type</th>
<th>Barrier (B), Facilitator (F), or Intervention (I)</th>
<th>Main Outcome(s) Related to this Review</th>
<th>Quality Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hensen,</td>
<td>sub-Saharan Africa: South Africa (4), Uganda (3), Cameroon (1), DRC (1), Malawi (1), Zimbabwe (1), Swaziland (1), Tanzania (1), Zambia (1), Kenya (1)</td>
<td>Systematic review</td>
<td>I</td>
<td>Uptake of HIV testing among men</td>
<td>Systematic review criteria met, risk of bias assessed, double review process used</td>
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<td>2</td>
<td>Musheke,</td>
<td>sub-Saharan Africa: Mali (1), Uganda (3), South Africa (5), Tanzania (3), Malawi (2), Zambia (2), Nigeria (1), Zimbabwe (1), Ethiopia (1)</td>
<td>Systematic review</td>
<td>B, F</td>
<td>Barriers and facilitators to HIV testing</td>
<td>Systematic review process, quality of included articles considered, meta-ethnographic approach to analysis</td>
</tr>
<tr>
<td>3</td>
<td>Obermeyer,</td>
<td>Burkina Faso, Kenya, Malawi, Uganda</td>
<td>Literature review</td>
<td>I</td>
<td>Number and % of individuals ever tested</td>
<td>Some elements of systematic review procedures followed, but not all, quality of included evidence not formally considered</td>
</tr>
<tr>
<td>4</td>
<td>Camlin,</td>
<td>Kenya, Uganda</td>
<td>Qualitative study</td>
<td>B, F</td>
<td>Barriers and facilitators to HIV testing</td>
<td>Theoretical framework, large number of communities (8), rigorous analysis process</td>
</tr>
<tr>
<td>5</td>
<td>Roura,</td>
<td>Sub-Saharan Africa: Botswana, Kenya, Zambia, Cameroon, Malawi, South Africa, Uganda, Congo, Rwanda</td>
<td>Systematic review</td>
<td>I</td>
<td>Effectiveness in identifying HIV+ cases; Offer and acceptance of testing; Behavioral outcomes of PITC (e.g. risky sexual behaviors); Linkage to treatment; Operational issues</td>
<td>Some elements of systematic review procedures followed, but not all, quality of included evidence not formally considered</td>
</tr>
<tr>
<td>6</td>
<td>Govindasamy</td>
<td>sub-Saharan Africa: South Africa (16), Uganda (7), Kenya (5), Malawi (3), Ethiopia (2), Tanzania (2), Zambia (2), Rwanda (1), Swaziland (1), Mozambique (1)</td>
<td>Literature review</td>
<td>B, F</td>
<td>Predictors for retention and linkage to ART; Barriers to accessing and remaining in HIV care</td>
<td>Rigorous search process and inclusion/exclusion criteria, double review, standard quality assessment form used</td>
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<tr>
<td>7</td>
<td>Sharma,</td>
<td>Sub-Saharan Africa: South Africa, Kenya, Uganda, Malawi, Nigeria, Tanzania</td>
<td>Systematic review</td>
<td>I</td>
<td>Coverage of intervention; uptake of HIV testing; HIV positivity and CD4 counts; linkage to care and retention; cost per person tested</td>
<td>Systematic review process, study design as one inclusion criteria, quality of included evidence reviewed, but not an exclusion criteria</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author</th>
<th>Country</th>
<th>Study Type</th>
<th>Barrier (B), Facilitator (F), or Intervention (I)</th>
<th>Main Outcome(s) Related to this Review</th>
<th>Quality Considerations</th>
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<td>8</td>
<td>Kennedy, 2013</td>
<td>Low- and middle-income countries: Rwanda (3), Côte d’Ivoire (3), Kenya (2), Zambia (2), Botswana (1), Democratic Republic of Congo (1), Malawi (1), Uganda (1), and Zimbabwe (1), China (2), India (1), Thailand (1)</td>
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<td>I</td>
<td>Uptake of HIV testing among individuals receiving PITC and resulting HIV risk behaviors</td>
<td>Systematic review criteria met, double review process used, study quality assessed using standard assessment tool</td>
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<td>Mtande, 2014</td>
<td>Malawi</td>
<td>Pilot test of an intervention</td>
<td>I</td>
<td>Engagement in couples counseling; HIV testing uptake; HIV status; POC CD4 testing; linkage to care</td>
<td>In-clinic intervention study; moderate sample size (1007)</td>
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<td>I</td>
<td>Uptake of HIV testing; Receipt of HIV test results; Repeat HIV testing and test incidence rate; HIV incidence; Treatment programme uptake; HIV related stigma</td>
<td>Systematic review process, rigor of study design as inclusion criteria, risk of bias assessed</td>
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<td>11</td>
<td>Sabapathy, 2012</td>
<td>Sub-Saharan Africa: Uganda (7), Malawi (5), Kenya (2), South Africa (2), Zambia (1)</td>
<td>Systematic review</td>
<td>I</td>
<td>Uptake of HIV testing; Receipt of HIV test results; Linkage to care</td>
<td>Some elements of systematic review procedures followed, but not all, quality of included evidence reviewed, but not an exclusion criteria</td>
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<td>12</td>
<td>Phiri, 2016</td>
<td>Zambia, South Africa</td>
<td>Pilot test of an intervention</td>
<td>I</td>
<td>Acceptance of intervention and uptake of HIV testing</td>
<td>3-arm community-randomization scheme, large number of communities (21)</td>
</tr>
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<td>13</td>
<td>Krause, 2013</td>
<td>Kenya (1), Malawi (1), USA, Spain, Singapore</td>
<td>Literature review</td>
<td>B, F</td>
<td>Acceptance of HIV self-testing, accuracy of HST, utilization of counseling telephone hotline, disclosure of test results, proportion of first-time testers, attitudes and opinions on HST.</td>
<td>Systematic review process, small number of findings limited rigor of studies included</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Study Number</th>
<th>Author</th>
<th>Country</th>
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<th>Main Outcome(s) Related to this Review</th>
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<td>Kenya</td>
<td>Qualitative study</td>
<td>I</td>
<td>Use of self-tests by male partners (self-reported by female partners)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>no randomization, modest sample size (278)</td>
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<td>Small, 2013</td>
<td>sub-Saharan Africa: Zimbabwe (1), South Africa (9), Gambia (1)</td>
<td>Systematic review</td>
<td>I</td>
<td>Biological factors, HIV risk, sexual risk, violence reduction</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Systematic review process, double review process, study design as inclusion criteria, quality formally reviewed</td>
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<tr>
<td>16</td>
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<td>sub-Saharan Africa: Kenya (4), Malawi (5), Nigeria (1), Rwanda (1), Burundi (1), DRC (1), Congo (1), The Gambia (1), South Africa (14), Ethiopia (1), Mozambique (1), Cameroon (1), Uganda (2)</td>
<td>Systematic review</td>
<td>I</td>
<td>% of patients dying before starting ART, % lost to follow-up, % with CD4 cell count, distribution of first CD4 counts and the % of eligible patients starting ART</td>
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8.1.2 Studies 1 and 4: Men Often Are Not Present in Locations Where HIV Testing and Care Take Place

Another underlying theme regarding male access to HTS is the challenge of reaching men more broadly—whether at a healthcare facility or at home. One review specifically explored HIV testing initiatives geared toward men and found that not only are men harder to access at healthcare facilities, but they are also harder to reach in the community via home-based interventions because they simply are not there.246 Few reviews, however, offered an explanation as to why this was the case. Providing some additional context to this finding, one study from the gray literature that examined barriers to male testing in Kenya and Uganda explained that informal sector labor contributes to long absences from home among men.249

8.1.3 Study 5: Providers May Not Consider Men’s Healthcare Needs

While not often explored, one review of PITC showed that even if males attend a healthcare facility, they were less likely to be offered a test, which suggests potential biases or training needs from the provider side.247

8.1.4 Studies 2, 4 and 6: There Are Few Known Facilitators to Male HIV Testing and Linkage

Very few studies identified facilitators to HTS among men outside of the context of testing as part of a research intervention (discussed in the following section). Facilitators include (1) male decision-making autonomy around testing, which is in contrast to limited decision-making autonomy sometimes seen among women, (2) the desire to prepare for marriage, and (3) the desire to use treatment, which may help maintain one’s status as the financial breadwinner if identified as HIV positive.248 Supporting this latter finding, the gray literature suggests that the availability of ART to prolong one’s health is an important facilitator to testing.249

8.2 Strategies Used to Improve HIV Testing Services for Men

8.2.1 Studies 1 and 7: Targeting Men Through Female Partners and Other Health Services Can Be Effective, But Is Not Enough

Recognizing the barriers to male utilization of healthcare facilities, several strategies have been used at the clinic level to reach men. These include interventions that target men via their female partners attending a health facility, and those that target men attending health clinics for other reasons (e.g., tuberculosis treatment). In terms of the success of these programs on male engagement in HTS, one review found that targeting men through pregnant partners was effective in increasing testing, though the reach still remained limited given the low number of men attending antenatal care.246 Another review of community- and facility-based HIV testing approaches found that men could be reached through index partner testing (no gender specified). Individuals tested included 41% men (95% CI:
20–91%). However, the percentage of men varied by tracing strategy from 50% with active tracing to 15% for passive clinic referrals.243

8.2.2 Studies 1, 8, and 9: Acceptance of Testing Once in the Clinic

Nested within clinic-based approaches were various strategies to encourage greater testing once a male is at the facility, including PITC (i.e., “opt-out” testing) and couples counseling. PITC was highly acceptable when men entered the healthcare arena. For example, among male inpatients in a hospital in Uganda, all of those offered PITC were tested, as compared with 65% of men who were offered a voucher.246 Another review found that there was no difference between an opt-in versus an opt-out testing approach among men attending antenatal care, family planning, or postpartum care with female partners.250 Finally, a study evaluating same-day couples’ HTC and point-of-care CD4 testing in Malawi found that 100% of men who received couples’ counseling were tested for HIV, although these male partners represented just 12% of all women being tested for HIV in the antenatal care clinic.251 These findings suggest that once men are at the clinic, acceptance of testing may not be a barrier.

8.2.3 Studies 7, 10, and 11: Home-Based Testing Has Shown Improvements in Reaching Men

Considering the challenges involved with reaching men inside a healthcare setting, strategies to reach individuals with testing services outside of this structure could theoretically play an important role in reaching men. The evidence from home-based approaches to HIV testing indicate that these approaches still tend to reach more women than men, though to a lesser extent than clinic-based approaches. One review, which specifically examined various home-based VCT approaches, found that the proportion of men offered HIV testing in these studies ranged from 22% to 49%, with an overall proportion of 47%.252

When looking at acceptance of HIV testing among those reached, the evidence is mixed. One randomized-controlled trial in Uganda testing home-based rapid VCT versus a conventional clinic-based program, found that women were more likely to take up HIV testing than men, (OR 1.18; 95% CI: 1.07–1.30).253 To the contrary, another review of several home-based testing approaches concluded that men were as likely as women to accept testing (78.5% [95% CI: 71.1%–86%] vs. 81.5% [95% CI: 72.9%–90.1%]). The pooled odds ratio of men accepting home-based testing was 0.84 (95% CI: 0.56–1.26) as compared with women.252

While home-based testing seems to have been acceptable among men and to have offered improved uptake of testing, it is important to note that when compared with other modes of testing, as was done in one review, it had the lowest levels of testing uptake. For example 40% of men who were offered testing accepted home-based approaches (95% CI=39–41%) as compared with 50% in mobile testing approaches and 42% in facility-based VCT.243
However, these comparisons may not reflect the relative success of one approach over another. For instance, the previously cited review finding of 47% uptake of male testing among all home-based approaches noted that the proportion of males attending clinics may be as low as 9%, suggesting that uptake among half of men in home-based approaches still represents a substantially better approach.252

8.2.4 Study 12: The Gender of Those Delivering Home-Based Testing May Not Matter

Like clinic-based testing, home-based testing may be operationalized in numerous ways. It can be delivered by various levels of healthcare workers of different genders or can be self-administered via new self-testing tools. In an effort to examine whether the gender of those delivering HIV testing would increase male uptake, one study tested pairs of counselors of varying genders (e.g., male-female pairs, male-male pairs, and female-female pairs). This pilot study, which was conducted in Zambia and South Africa, showed high acceptance of the intervention regardless of the gender makeup of the pair, as well as high uptake of HIV testing. Among eligible male participants (those never tested or self-reported negative), 68.0% accepted testing in pairs with at least one male health worker versus 63.6% from female-only pairs (OR 1.2; 95% CI: 0.97–1.53).254

8.2.5 Studies 1, 13, and 14: HIV Self-Testing Shows Promise Among Men

The evidence around male acceptance and uptake of self-testing is still limited; however, feasibility, acceptability, and uptake appear high.246 In one review on the acceptability of self-testing, which drew on only two studies from Sub-Saharan Africa, acceptability was high overall, with 70% of clients accepting. The results were not disaggregated for males; however, one study from Malawi demonstrated similar uptake for men and women, with men having a lower baseline history of HIV testing.255 Other evidence specific to male uptake of self-testing comes from a qualitative study on the feasibility and acceptability of male partner HIV self-testing via distribution by female partners in Kenya. This study found that high proportions of women (77% FSWs, 91.8% antenatal, and 86% postpartum female clients) gave at least one self-test to a primary sex partner. At follow-up, women reported that 98% of self-tests given to male sexual partners were reported to have been used.256

8.2.6 Studies 1 and 7: HIV Testing in Alternative Settings Holds Promise

One review provided evidence regarding the impact of workplace testing on male uptake of HIV testing. The study concluded that these approaches have been shown to reach greater numbers of men when compared with other male targeted approaches. For example, one randomized controlled trial in Zimbabwe, which randomized businesses to on-site testing or vouchers for off-site testing, found that when on-site testing was offered 55% of male employees were tested.246
Mobile testing has also shown higher levels of success at reaching men. In a study evaluating mobile testing in Tanzania and Zimbabwe using a community-randomization approach, testing rates in Tanzania were almost five times higher in communities randomized to mobile testing compared with standard VCT. In these communities, 44% of men tested compared with only 9% in the nonintervention communities. In Zimbabwe, the difference was even greater, with 53% of men testing in intervention communities compared with 5% in the control. Comparing mobile testing to other community- and facility-based HIV testing approaches also determined that this approach has reached the highest percentage of men (50%; 95% CI: 47–54%).

8.2.7 Study 15: Directly Addressing Harmful Gender Norms May Encourage Testing

Directly targeting gender norms that act as a barrier to HIV testing is another approach to improving uptake of testing among men. In a review of all gender-focused approaches, two included studies focused on men exclusively, with both reporting an increase in HIV testing uptake. Each of these interventions offered a series of educational sessions on HIV risk reduction tailored to addressing gender norms impacting men’s risk. These sessions covered topics such as gender roles, meanings of masculinity, and harmful attitudes toward women. In one intervention, 23% of men who had not previously tested reported testing for HIV during the week of the intervention, though there was no comparison group. A second study, which compared a five-session GBV/HIV risk-reduction intervention to a single session alcohol/HIV intervention group found that men in the GBV-focused group, who had not previously tested for HIV, were more likely to test at 1 and 3 month follow-ups.

8.2.8 Studies 9, 13, 14, and 16: Linkage to Care

Only two reviews reported outcomes related to men’s linkage to care following HIV testing. One review, which focused on the acceptance of HIV self-testing, suggested that the two African studies included showed a preference for in-person post-test counseling and services, as compared with a telephone-based counseling hotline. Numbers linking to care were not presented. The other review, which aimed to quantify the loss-to-follow-up between HIV testing and ART initiation demonstrated that men are more likely to be lost to follow-up and less likely to start ART than women regardless of mode of entry (e.g., VCT, via antenatal care, or from a TB or STI clinic). Two other studies identified in the gray literature also suggest challenges in linking men to care. In a study where female partners offered self-tests to others, 10.6% (72/681) of those who self-tested were reported to have obtained an HIV-positive result. Women reported that 55% of those testing positive sought confirmatory testing by the end of the 3-month follow-up period. Piloting an approach to improve men’s linkage to care, one study utilized same-day couples’ HIV testing and point-of-care CD4 testing for male partners. Among the 8% of men who tested positive, only 27% received point-of-care CD4 testing. Out of those receiving CD4 results, 36% (n=8) qualified
for treatment (i.e., had a CD4 <350 cells/mm³) and 63% of these (n=5) presented at a health clinic on the same day.²⁵¹ None of the studies presented specific reasons for dropout along the care cascade.

8.3 Ongoing Research and Programming

8.3.1 “Confirmation of an Unspoken Truth”: Community Perspectives on Men’s HIV Testing Behavior in South Africa

Researchers conducted 15 focus group discussions and nine IDIs in six districts in four provinces in South Africa to better understand barriers and facilitators to HTS among men. In total, 97 males and 26 females aged 18 to 24 and 25 to 35 from urban, peri-urban and rural localities participated in the research (www.brothersforlife.org/sites/default/files/Brothers_for_Life_.pdf). Common reasons cited for testing included to protect one’s status if negative and adopt a healthy lifestyle if positive; to access treatment; and to protect one’s sex partner. The most frequently cited barriers to testing were psychosocial factors, including gender norms and notions of masculinity, fatalism/perceived inevitability of infection, continuing belief that a positive result equals death, denial and preference not to know one’s status, stigma related to HCT and fear of disclosure, and mistrust of HIV test (i.e., believing the needle used for testing can infect you with HIV). This research also identified a number of health-services-related barriers, including health facilities not being “male-friendly” (clinics seen as women’s space); HCT services do not provide sufficient privacy; healthcare workers are judgmental, and do not respect clients’ confidentiality; and pre-test counseling seen as intrusive, fear-based, and of limited value. Facilitators of HIV testing identified in this research included being symptomatic, knowing a person living with HIV, partner-related factors, ART availability (mentioned only by a few), VMMC as an entry point, and workplace testing. Participant recommendations to increase male testing included enhancing HCT privacy and quality of services, providing door-to-door HCT and mobile testing for men who avoid health facilities, making home testing kits (self-testing) more accessible as these provide privacy and confidentiality, extending the Men’s Health/Wellness Clinic concept, and discarding the hypothetical “HIV positive” scenario during pre-test counselling. Based on these findings, a media campaign will be carried out using television, radio, billboards, social media, and SMS to increase demand for and uptake of HIV and other sexual health services.

8.3.2 Activating Treatment as Prevention through Community Mobilization in South Africa

This research will evaluate the impact of a community mobilization intervention on the uptake of HIV testing and linkage to and retention in HIV care, with a focus on men, using a community cluster randomized trial design within 16 villages (PI Sheri Lippman). Formative research in the form of qualitative IDIs and a social network questionnaire with HIV-positive and HIV-negative men aged 18 to 49 will inform the community mobilization effort. In the
Agincourt health and demographic surveillance site, 8 of 16 communities will be randomized to receive a community mobilization intervention to activate treatment as prevention. The study will last approximately 5 years. Cross-sectional community surveys will evaluate the impact of the community mobilization intervention, and clinic data will be used to evaluate the uptake of HIV testing and linkage to and retention in HIV care. This study will determine (1) whether uptake of HIV testing among residents of communities receiving a community mobilizing intervention is higher than residents of control communities, (2) whether linkage to care is higher among residents of intervention communities as compared with control communities, (3) whether retention in care is higher among people in intervention communities as compared with control communities, and (4) will explore changes in community mobilization domains as well as how differences in each domain associate with changes in individual outcomes (testing, linkage, and retention) over time.

8.3.3 Developing and Assessing a Male Engagement Intervention for Option B+ in Malawi

Option B+, Malawi’s program for providing immediate, lifelong combination antiretroviral therapy (cART) to all HIV-infected pregnant women at the time of diagnosis, is a promising setting for engaging male partners in care. Within Option B+, investigators (PI Nora Rosenberg) will develop an intervention that uses partner notification to recruit male partners and then engage them in a couple-based intervention with their HIV-infected female partner (Aim 1). The intervention will be guided by formative research and the dyad-level Interdependence Theory and is aimed at improving linkage to care for HIV-infected male partners, preventing HIV acquisition for HIV-uninfected male partners, and promoting cART retention for HIV-infected female partners. Investigators will conduct a randomized controlled trial (N=500 couples) to assess intervention effectiveness at one year, and assess whether the intervention increases engagement in HTS among HIV-infected male sex partners (Aim 2), identify HIV-discordant couples and decrease the likelihood of HIV exposure for HIV-uninfected male sex partners (Aim 3), and improve cART retention and viral suppression for all female partners (Aim 4).

8.3.4 Gender Disparities in High-Risk Provider-Initiated Testing and Care: The Role of Policy on Provider Practices

The specific focus of the proposed study is to examine men’s underutilization of HIV testing, and consequently life-prolonging treatment (PI Kathryn Dovel). This study in Malawi will be the first to examine if HIV policy influences providers’ perceptions of gender and HIV, and whether this affects providers’ implementation of HIV testing protocols for TB and STI clients. The study has three aims: (1) to use policy discourse analysis to examine how men and women are portrayed in HIV policy, using as texts both national policies and provider-training materials; (2) to collect and analyze data from IDIs with healthcare providers to assess whether there are differences in their perceptions of male and female clients; and
(3) to collect and analyze data from exit surveys with TB and STI clients to test whether providers offer HIV testing differently to male versus female clients. The findings from the three aims will be examined together through mixed-methods analysis to explore the relationship between HIV policy, provider perceptions, and provider implementation of HIV testing protocols. Additionally, the findings will have implications for HIV policies and can help inform interventions designed to increase men’s use of HIV services.

**8.3.5 Uptake of Antiretroviral Therapy and Male Circumcision After Community-based HIV Testing and Strategies for Linkage to Care Versus Standard Clinic Referral: A Multisite, Open-Label, Randomized Controlled Trial in South Africa and Uganda**

This multisite, open-label, randomized controlled trial was conducted in six research-naive communities in rural South Africa and Uganda (www.ncbi.nlm.nih.gov/pubmed/27126488). Eligible HIV-positive participants (aged ≥16 years) were randomly assigned (1:1:1) in a factorial design to receive lay counselor clinic linkage facilitation, lay counselor follow-up home visits, or standard-of-care clinic referral; and then (1:1) either point-of-care CD4 cell count testing or referral for CD4 testing. HIV-negative uncircumcised men (aged 16 to 49) who could receive secure mobile phone text messages were randomly assigned (1:1:1) to receive text message reminders, lay counselor visits, or standard clinic referral. Primary outcomes for HIV-positive people were obtaining a CD4 cell count, linkage to an HIV clinic, ART initiation, and viral suppression at 9 months; and for HIV-negative uncircumcised men were visiting a circumcision facility and uptake of male circumcision at 3 months. A total of 15,332 participants were tested, of whom 2,339 (15%) tested HIV-positive and 12,993 (85%) tested HIV negative. Of 1,303 HIV-positive participants, 1,218 (93%) were linked to care, but only 488 (37%) participants initiated ART. Overall, 635 (50%) of 1,272 HIV-positive individuals achieved viral suppression at 9 months: 219 (52%) of 419 participants in the clinic facilitation group, 202 (47%) of 431 participants in the lay counselor follow-up group, and 214 (51%) of 422 participants in the clinic referral group, with no significant differences between groups. Of 734 HIV-negative men, 523 (72%) visited a circumcision facility, with no difference between groups. Of 224 men, 62 (28%) were circumcised in the male circumcision clinic referral group compared with 137 (48%) of 284 men in the text message reminder group (relative risk 1.72; 95% CI: 1.36–2.17; p<0.0001) and 106 (47%) of 226 men in the lay counsellor follow-up group (1.67; 95% CI: 1.29-2.14; p=0.0001). In summary, all the community-based strategies achieved high rates of linkage of HIV-positive people to HIV clinics, roughly a third of whom initiated ART; and of those, more than 80% were virally suppressed at 9 months. Uptake of male circumcision was almost two times higher in men who received text message reminders or lay counselor visits than in those who received standard-of-care clinic referral.
8.3.6 Man Up

Nested within the Population Effects of Antiretroviral Therapy to Reduce HIV Transmission (PopART) study in Zambia is Man Up. The aim of PopART is to determine the impact of a package of HIV prevention interventions on community-level HIV incidence. These prevention interventions include universal household VCT, linkage of HIV-infected individuals to care and early initiation of ART for all those testing HIV-positive. In Zambia, one of the main issues that has been identified is that it has been easier to find and test women than men. This study had been able to gather information on testing behavior for approximately 90% of women but less than 80% of men. Man Up was developed to close this testing and linkage gap in men, and was informed by focus group discussions with men. The primary strategy in PopART is going door to door to offer HIV testing and provide information and support for linkage to post-test services. In addition to door-to-door testing, Man Up has initiated community health campaigns that are not focused on HIV. This resulted in testing large numbers of men, but it was determined that they were not capturing many new men who had not been reached through door-to-door testing. Man Up has additionally begun engaging employers, and targeting bars, allotment fields, fishing camps, and transportation hubs as testing sites. The program has also added small health campaigns in smaller more targeted zones, and have tried using male providers to serve male clients, which had only a modest, nonsignificant effect. Shifting hours of testing to weekends and evenings had some impact on reaching men. There have been modest increases in testing and linkage; however, missing men are still the big target in the PopART program.

8.3.7 Sustainable East Africa Research in Community Health (SEARCH)

Taking place in Kenya and Uganda, SEARCH involves using treatment to stop the spread of HIV and build community health (www.searchendaids.com). The SEARCH study includes 32 communities of roughly 10,000 persons each in Uganda and Kenya. In terms of community engagement for testing and linkage, SEARCH targets the whole population by first conducting community health campaigns and then following up with home-based testing to reach those that have not tested or have not linked to post-test services. This trial, much as in Man Up, initially had difficulty accessing men. They also found that men are very interested in other non-HIV related health multi-disease campaigns. Men in this study requested a “men only” tent, where they could discuss male issues, most commonly male sexuality. This trial was able to achieve 90% uptake of testing among men.

8.3.8 Khayelitsha Male Clinic

In the Western Cape of South Africa, the health authorities set up some male-only and male-friendly clinics. Men said they wanted a male-only clinic with longer opening hours and close to a transportation hub. The first was in 2007 and established as a walk-in clinic situated by a taxi rank, with HIV testing and STI services. There are now have five male clinics in Cape Town and three in Kayelitsha. Originally, these clinics were to be staffed by men from the
predominant ethnic group; however, this has been a challenge. It also has taken time for men to buy in to this approach, but ultimately the clinics have been well attended.

**8.3.9 Self-Testing Research Among Men**

*3IE Research*

As part of several rounds of funding calls for research on HIV self-testing, a body of work is underway or recently completed on strategies to engage men in HIV self-testing. Three studies among men are being conducted in Kenya. The first is a randomized controlled trial among truck drivers that looks at the effect of adding HIVST to clinic and non-clinic settings on uptake of HIV testing. The study will randomly assign 300 truck drivers that visit two clinics into two study arms. Participants in one study arm will be offered standard provider-administered HIV blood tests, and those in the second treatment arm will be offered a choice of a standard HIV blood test or a supervised self-administered oral HIV test. All 300 participants will be followed for the duration of the study and will be offered text message reminders on the importance of follow-up testing at 3 months post-baseline. Additionally, clients that take self-administered tests will be asked to return to any one of seven clinics within 3 to 6 months to pick up a second HIV oral self-test. The study intends to address some of the barriers to HIV testing among truck drivers, including issues of privacy and confidentiality, long wait times to get results and get tests done, and irregular schedules of the truck drivers.

The second study targets men via their partners attending antenatal care clinics. This study will evaluate oral HIV self-tests offered at antenatal care clinics on the acceptability and uptake of male partner testing in Kenya. The study will also evaluate several secondary outcomes, including linkage to care, HIV test results, and information provided by the male partner. The study will individually randomize approximately 1,425 pregnant women who are visiting an antenatal care clinic within 14 designated hospitals into three treatment arms. Pregnant women in the first study arm will receive a standard letter addressed to the client’s male partner that invites him to join the client on her next clinic visit. Pregnant women in the second study arm will receive an improved letter that shares specific information on HIV, the prevalence of serodiscordant couples, and ways of preventing mother-to-child transmission of HIV. The third study arm will receive the improved letter, a standard HIV test administered on site, and two self-testing kits for the client to take home and use with her partner.

A third study also targets men via their partners attending antenatal care clinics. This study evaluated the impact of self-tests provided at these clinics on uptake of couple and/or male partner testing. The study also evaluated several secondary outcomes that included discussing HIV testing with partners, couple self-testing (testing together), risk behavior, HIV status disclosure to partners, post-test sexual behavior and decision making, and adverse reactions. The study individually randomized 580 pregnant and postpartum women to receive standard care and a referral letter encouraging the partner to get tested, or standard care and two self-test kits to take home. All participants were followed for the
duration of the study and were contacted at 3 months post-enrolment for follow-up interviews. The study intended to address some of the barriers to HIV testing among partners, including stigma, economic costs, and social norms that inhibit male participation in healthcare. Among 570 participants with follow-up data, partner HIV testing was more likely in the HIVST group (90.8%, 258/284) than in the comparison group (51.7%, 148/286). The difference of 39.1% was statistically significant (95% CI: 32.4%–45.8%, p<0.001). Couples testing was significantly more likely in the HIVST group than in the comparison group (difference=42.1%: 95% CI: 34.7%-49.6%, p<0.001).

8.3.10 “Secondary Distribution” of Self-Tests by Female Sex Workers
This research again uses the strategy of distributing self-test kits to women to distribute secondarily to their male partners (PI Harsha Thirumurthy). In this study, HIV-uninfected FSW aged 18 to 39 were recruited at a drop-in center for FSW. FSW received five self-tests, and structured interviews were conducted with them at enrollment and over 3 months to determine how self-tests were used. Key outcomes included the number of self-tests distributed by IPs, the proportion of IPs whose sex partners used a self-test, couples testing, and sex behaviors following self-testing. Among the 102 FSW enrolled, 101 completed a follow-up interview. Among FSW with a primary sex partner, 75% distributed a self-test to that partner. A vast majority of FSW also distributed ≥1 self-tests to commercial sex clients (82/101, 81%). Among self-tests distributed to and used by primary sex partners, couples testing occurred 83% of the time; 13.8% of sex partners tested HIV-positive. Sexual intercourse was significantly less likely after a sex partner tested HIV-positive versus HIV-negative, whereas condom use was significantly more likely.

8.4 Discussion
The literature on men’s engagement in HTS remains largely encompassed within the broader literature from the general population. There is a relatively modest body of review articles of research and interventions around HTS that focuses specifically on men. In our review, we identified men’s underutilization of healthcare as one of the primary barriers to HIV testing. Health services were commonly cited as being thought of as female spaces, and consequently not accommodating to men. Provider factors were another barrier identified, where clinics are not considered to be “male-friendly,” and men reported that HCT services did not have sufficient privacy, and healthcare workers were judgmental and did not respect clients’ confidentiality. Men also cited that pre-test counseling is often seen as intrusive, fear-based, and of limited value. Additional structural barriers to testing were also identified, including gender norms and notions of masculinity, fatalism or perceived inevitability of infection, stigma around HTS, and denial and preference not to know one’s status. Finally, in addition to challenges around men’s attendance at health facilities, men are often not present in other locations where HIV testing takes place, including community- and home-based strategies.

Although barriers to testing among men are acknowledged, less has been reported regarding the relative importance of specific barriers for men. For instance, the literature
suggests that male gender norms around masculinity inhibit healthcare facility use; however, it is unclear how much this contributes to men’s limited use of healthcare services as compared with other barriers reported for the general population (e.g., distance to facilities, hours of facility operation, etc.). Additionally, perhaps given the lower rates of testing, there are limited data on the facilitators to male testing, which presents a challenge to identifying potential solutions. Some facilitators that have been identified include creating male-only or male-friendly clinic services, and providing services at alternate locations and/or hours to accommodate men, such as workplace testing and evening and weekend services.

Nonetheless, there are interventions that have shown promise in increasing engagement in HTS. Workplace testing, or testing in alternate locations where men congregate, has shown evidence of increased testing uptake. Similarly, community-based strategies that take into account men’s schedules by providing services on evenings and weekends have improved HTS uptake. Additionally, men have expressed an interest in attending other healthcare services in the community that are not HIV-specific, and high attendance by men can be achieved through other health promotion activities. Integrating HTS into this model has shown some success.

Similar to other key and hard-to-reach populations, HIVST represents a promising strategy to increase testing uptake among men. This strategy has high acceptability among men; and in community-based testing, uptake by men has often been roughly equal to that of women. A number of self-testing studies are currently underway that will provide valuable data around accuracy, potential distribution strategies, linkage to post-test services, and ways to facilitate this link. Notably, in this population, several studies are underway exploring “secondary distribution” of self-tests to men via their female sex partners. This represents a novel and potentially powerful tool to reach high-risk men who may not otherwise engage in routine testing. How this might be best implemented from a programming perspective, what level of linkage among men this might result in, and exploring any potential safety issues are important aspects of this distribution strategy that will require further research and careful monitoring.

While some interventions among men have demonstrated high attendance, it is worth noting that little data exists on testing history among these men, or HIV case finding. Given the available data, it is not known whether these interventions are reaching at-risk men who would not have otherwise tested through the available testing strategies.

Figures 8-2 and 8-3 summarize the barriers and facilitators to HTS identified in this review. Overall, there is a dearth of information on facilitators and barriers to linkage to post-test services, as well as interventions to promote this linkage among men. This represents an important gap in the literature for which more research and more monitoring of ongoing programming is needed. There is also an absence of data on the cost-effectiveness of any of these strategies to increase testing among men.
Figure 8-2. Barriers to Testing and Linkage: Men

- Healthcare facilities viewed within female domain
- Fear of diminished respect in the community
- Work and informal sector labor keep men away from home and/or clinic
- Providers not offering PITC
- Reduced marriage opportunities
- Strain on existing relationships
- Masculinity, linking health seeking behavior with weakness

Figure 8-3. Facilitators to Testing and Linkage: Men

- Targeting men seeking other health care (e.g., tuberculosis treatment), particularly with PITC or opt-out testing
- HIV self-testing
- Testing outside of the clinic (e.g., workplace, mobile, community, home-based)
- Addressing harmful gender norms
- Desire to prepare for marriage
- Targeting men through female partners
- Male decision-making autonomy
- Desire to use treatment to prolong health and ability to work
8.5 Recommendations

Based on the findings for men, the following recommendations can be made:

▪ Disaggregation of study findings by gender was uncommon. Routine disaggregation of data by gender is recommended in order to understand the impact of interventions on men.

▪ Conduct further research to understand the relative importance of barriers (and facilitators) to testing among men, which would permit tailored intervention strategies that may have greater impact. Similarly, improved understanding of male motivations around health could be leveraged to encourage men’s engagement in HTS.

▪ Explore implementation of male-friendly and male-only clinics to increase male engagement in HTS. Clinics should be tailored to men in terms of location and hours of operation.

▪ Train providers to reduce bias and to be more male-friendly, including respecting the confidentiality of men, reducing stigma, addressing their specific health needs, and ensuring that HTS strategies such as PITC are routinely offered to men.

▪ Given the findings around men’s absence in healthcare settings, we recommend workplace and community-based testing strategies. These strategies should be tailored to the locations and times at which men are most likely to be present.

▪ Conduct further research around whether strategies that improve engagement of men in HTS are reaching high-risk men who do not otherwise engage in currently available services.

▪ Although data were limited, self-testing represents a promising new strategy to increase uptake of testing in at-risk men. Consequently, further research is warranted, particularly to explore distribution strategies, to evaluate linkage to post-test services among men testing positive, and to identify what support is required to promote successful linkage after self-testing.

▪ Conduct further research on strategies to increase linkage to post-test services and on programming that carefully monitors and evaluates linkage among men.
9. DISCUSSION AND CONCLUSIONS

To help address the knowledge gap regarding HIV status and linkage to post-test services, this “landscape” review explored policy, published literature, and ongoing research and programming relevant to HTS. It focuses on the key populations of FSW, MSM, and PWID, AGYW, and men in six focal countries in Sub-Saharan Africa. The objectives include identifying relevant policies that may inhibit or facilitate implementation or engagement in HTS; identifying in the published literature the barriers and facilitators to HTS, and interventions that successfully promote HTS; identifying ongoing HTS research and programming, and providing recommendations for the way forward.

9.1 Summary of Results

9.1.1 Policy

Our policy review highlighted that all six focal countries have laws criminalizing key populations and people living with HIV. South Africa’s policies were the most liberal, and it is the only country that does not explicitly criminalize MSM. However, stigma and discrimination against same-sex sexual conduct is still pervasive in South Africa, as in all of the focal countries. All of these countries, with the exception of South Africa, criminalize transmission and exposure of HIV; however, other laws in South Africa have been used to criminalize transmission.

All of the countries’ HIV strategies address vulnerable populations and settings; however, only Kenya and Tanzania address PWID. Criminalization increases the likelihood that MSM, PWID, and sex workers will experience violence from law enforcement officials, and discrimination by service providers, and other citizens. Additionally, when these identities intersect (e.g., a person identifies as both a PWID and a sex worker) vulnerabilities increase. Criminalization, discrimination, and violence inhibit access to HTS.

9.1.2 Published Literature

Our review of the published literature highlighted a number of common barriers to HTS across all populations. Foremost among these was stigma—highlighted by both the target populations and by HCW—which can manifest in multidimensional, oftentimes intersecting, and destructive ways. For key populations, criminalization was also a fundamental barrier. Other common barriers across populations included financial and/or logistical, lack of confidentiality, fear of results and low risk perception.

In terms of facilitators, several strategies emerged across all populations as being impactful in promoting engagement in HIV testing and/or linkage to post-test services. One strategy involved efforts to develop the cultural competency of HCW to address the unique needs of
each target population, and to address stigma and discrimination common in the healthcare system.

Another set of approaches involved the implementation of outreach strategies for testing, including mobile, community-based, home-based or other venue-based strategies. These strategies included not only offering HTS at locations where the target population is likely to be, but also at times when they are likely to be there. Offering HTS within population-specific services, which have developed the cultural competency for providing services to different key populations (i.e., population-friendly services), was another commonly identified facilitator. This includes, at a minimum, offering services in a non-stigmatizing environment, training HCW to be able to address the unique needs of the population, and offering services at times and locations convenient to the targeted population.

Finally, offering combination services was a facilitator across all populations. Providing a range of services, including HIV testing and appropriate post-test services in one location, facilitated engagement in the full range of HIV services. The provision of additional non-HIV services not only provided additional impetus to visit the facilities but also destigmatized clinics from being deemed “HIV clinics”.

9.1.3 **Programming**

Our key informant work to identify ongoing research and programming presented a wide range of initiatives, many of which address key facilitators and barriers identified in this review. A number of countries are implementing multisite or national programs to engage FSW in HTS. To a lesser extent, this also is underway among MSM. However, a body of research and programming among MSM is emerging in several of the focal countries, most prominently in South Africa.

Three countries have initiated NSP and OST services for PWID, and at least two of these countries are employing strategies to integrate HTS within these structures. Although little research appears to have been conducted specifically around engaging AGYW in HTS, the ongoing DREAMS initiative represents the largest endeavor to date to address HIV risk in AGYW. Embedded within large community-based test and treat trials, including PopART and the SEARCH study, are a variety of strategies being piloted to engage men in HTS. A promising new testing approach identified in this key informant work was research around HIV self-testing. Though few completed studies were available in our literature review, a wide range of studies are underway in every target population, except PWID.

9.2 **Limitations**

Although this landscape review provides an important overview of policy, published research, and ongoing research and programming among the target populations in the six focal countries, it is important to acknowledge several limitations and research gaps.
9.2.1 Limited Temporal and Geographic Scope

We confined the temporal and geographic scope of our research to a 5-year time frame within six focal countries; consequently, the breadth of regional data is not represented here, nor are data from previous periods that may or may not remain relevant to HTS in our target populations. It is also important to note that the available research we identified is typically focused in major urban centers; consequently, we are limited in what we can say about populations outside of urban centers. This, in turn, limits the generalizability of our findings.

9.2.2 Lack of Intervention Specificity

We identified a lack of methodological specificity across study interventions, which may reflect the restrictions on word count in peer-reviewed publications and consequently limit the level of theoretical and methodological detail reported. Sometimes this can be addressed with precise descriptions of key details. However, understanding the intricacies of implementation approaches often requires a more detailed understanding of who does what, when, where, and how. Furthermore, inclusion of gray literature in the form of conference abstracts, presentations and brief reports, while enriching the overall findings, resulted in a lack of intervention specificity. Consequently, we could not always discern important information that would be required to fully assess study quality and rigor. Details required to replicate interventions demonstrating a positive impact on HTS will likely require further investigation and communication with study investigators.

9.2.3 Sampling of Key Populations

The key populations in the identified research are by definition hard-to-reach, and no gold-standard sampling approach has been forthcoming. For many of the studies presented here, participant recruitment commonly comprised convenience, snowball, or purposeful sampling. These strategies are not intended to produce representative samples, and in all likelihood they miss persons most hidden and at highest risk. Random sampling of clinic attendees may improve on the former strategies. However, the limitation of this strategy is that an individual must attend clinic services to be recruited; and again, those who do not engage in services are likely to be at highest risk. Time-location or respondent sampling were utilized in a very small number of identified studies. These approaches are designed to improve sampling of hard-to-reach populations, although the preference of these approaches tends to vary substantially by context. Because of the sampling strategies employed in the large majority of research, limitations exist with regard to the generalizability of the data, and the potential biases that may exist therein.
9.3 Prominent Findings and Promising Interventions: Overarching Recommendations for the Way Forward

While we provided population-specific recommendations within each chapter, we also have identified a series of themes that are common across several or all of the target populations. We present below a set of overarching themes and recommendations for research and programming that we believe are required to facilitate understanding of the issues and to improve engagement in HTS among the target populations.

9.3.1 Address Policies that Criminalize Key Populations and People Living with HIV

Policies that criminalize key populations and people living with HIV increase the likelihood that populations targeted by these policies will experience violence from law enforcement officials and discrimination by service providers and other citizens. Criminalization, discrimination, and violence inhibit access to HTS, and strategies to address this could have a profound impact on the HIV epidemic. Shannon and colleagues modelled the potential impact of scaling up structural interventions in FSW, specifically around elimination of sexual violence and decriminalization of sex work in three epidemic setting (Canada, India and Kenya). Decriminalizing of sex work would increase ability to use condoms, and would subsequently avert 33% to 46% of HIV infections. Elimination of sexual violence alone was shown to avert 17% to 20% of HIV infections among FSW and their clients in the next decade. Aside from the Sisters With a Voice program in Zimbabwe, which offers paralegal services, no interventions identified in this review specifically addressed structural barriers around criminalization. Research, programming, and activism is recommended to address policies that criminalize key populations and people living with HIV.

9.3.2 The Role of Stigma

Stigma has consistently emerged as a barrier to HTS across all target populations in this review. Stigma can negatively impact engagement in HTS, along with all subsequent steps of the HIV care cascade (Figure 9-1). Stigma is multidimensional, intersectional, and can be classified into seven categories, as defined in Figure 9-1. Most of these different types of stigma emerged in this review. The impact of stigma on engagement in HIV services has not been routinely measured, despite its prominent role as a barrier across populations and settings. However, stigma is measureable, and a number of validated measurement tools exist. To address stigma as a barrier to engagement in HTS, a first step involves adopting routine measurement of stigma in research and programming. Stigma reduction is actionable (Figure 9-1), and we recommend that research and programming implement and evaluate evidence-based models and practical tools to address and reduce stigma.
9.3.3 Bringing HIV Testing Services to the Client

Strategies that bring HTS out of static facilities and directly to the target population—at times that are convenient for that population—have demonstrated success across populations and settings. We recommend implementation and scale-up of strategies that bring HTS to the hard-to-reach populations targeted in this review through home-based, community-based, mobile, and other outreach testing strategies.
9.3.4 Dedicated and Population-Friendly Services

Dedicated, population-specific services—using either mobile or static facilities and scheduled or drop-in services—have demonstrated success in engaging the target populations in this review in HTS. One key to success was developing the cultural competency of HCW providing HTS services to address the unique needs of each of the target populations in a non-stigmatizing environment. Furthermore, leveraging social support structures by strengthening peer support and a more cohesive social environment has been shown to increase willingness to engage in HTS, and peer outreach and education was typically a component of dedicated service models. The feasibility of creating dedicated services for each hard-to-reach population is unclear and will vary by population; also, cost-effectiveness data on dedicated service models are not available. Nonetheless, based on available data, we recommend implementation of dedicated services based on country epidemiology and government priorities. For some population-specific programming, accompanying cost-effectiveness analyses may be beneficial in determining whether larger scale-up is warranted. A small number of ongoing programs are also examining transfer of population-friendly skills from dedicated services to government services. We also recommend further research to explore the effectiveness of this is approach, as it may represent a more feasible alternative to dedicated services.

9.3.5 Combination/Comprehensive Services

Programmatic data indicate that combination service provision that offers testing and a range of post-test prevention and care services in one location is effective in engaging the target populations in HTS. This strategy is particularly effective for facilitating linkage to post-test services. Additionally, offering HIV services plus other services—such as family planning, paralegal, STI management, cervical cancer screening—may offer additional incentives to attend clinics, where provider-initiated testing can then be offered. Furthermore, offering a range of services may reduce stigma associated with attendance at what may be perceived as an “HIV clinic.” We recommend implementation and scale-up of combination service provision. Collaboration across organizations and agencies may facilitate implantation of combination services.

9.3.6 HIV Self-Testing

HIVST represents one of the most promising new strategies to increase uptake of HIV testing. It has the potential to address a number of the barriers identified in our review of the literature, including stigma, loss of confidentiality, and logistical barriers to testing. HIVST gives people the opportunity to test for HIV discreetly and conveniently and may increase uptake of testing among individuals and populations reluctant to test using currently available testing strategies.
HIVST does not provide a diagnosis, rather it is a screening tool, with a reactive self-test result requiring confirmatory testing by a trained service provider for diagnosis. Data have demonstrated high acceptability of HIVST across a range of populations and settings, including those targeted in this review.

Policies around HIVST vary across the focal countries in this review (Table 9-1). WHO has endorsed additional research and programming around self-testing, to explore some of the important outstanding implementation questions; for example, around approaches to introducing and monitoring the acceptability, uptake, and effectiveness of HIVST.\textsuperscript{261} It is widely anticipated that WHO will include HIVST in their updated HTS guidelines to be released in late 2016.

Table 9-1. Current HIV Self-testing Policy Environment in Focal Countries

<table>
<thead>
<tr>
<th>Policies Explicitly Allowing HIVST</th>
<th>Policies Under Development</th>
<th>HIVST Available Informally</th>
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<tbody>
<tr>
<td>Kenya</td>
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</tr>
<tr>
<td>Malawi</td>
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<td></td>
</tr>
<tr>
<td>South Africa\textsuperscript{a}</td>
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</tbody>
</table>

\textsuperscript{a} South African policy does not prevent HIV self-testing.

The ambitious STAR project is the largest evaluation of HIVST in Africa to date. STAR will provide critical data on the HIVST landscape, with aims of normalizing HIVST, stimulating and guiding investment in product development, and providing impetus and technical support for market readiness. It will generate important information about HIVST demand creation and the potential public health impact of HIVST, as well as valuable insight into methods of HIVST delivery within the implementing countries (see Figure 4-3). STAR will also look at costing and cost-effectiveness of HIVST programming. Embedded within this program are several exploratory research components evaluating feasibility, methods of self-test kit distribution and/or uptake among some of the key populations of interest in this review. Methods and target populations vary by country, and the research components of HIVST being explored in countries may not be generalizable to other settings. While the STAR project will enhance our understanding of HIVST, particularly around demand and delivery in the general population in implementing countries, there remain many outstanding research questions in this relatively nascent field of research.

With proven acceptability across populations and settings, we recommend HIVST implementation research. In particular, important questions to be explored include how best to distribute self-test kits to reach persons of unknown HIV status and/or who require frequent testing, how to ensure high accuracy, how to facilitate linkage to post-test services, monitoring of adverse events, how best to facilitate of couples HIVST or voluntary disclosure after self-testing, how HIVST might affect sexual decision-making, and how to
9.3.7 **Size Estimations of Key Populations**

Population size estimates were imprecise or unavailable for the key populations included in this review. This lack of information undermines understanding of the HTS environment, what resources are required to address engagement in HTS in these populations, and the impact of current programming. Research suggests an inverse relationship between reported HIV risk and engagement in community-based and health facility-based services. It is likely that existing services, even those that demonstrate evidence of a positive impact on HTS, are still missing the highest risk portion of these key populations; thereby perpetuating existing inequities in HIV risk and burden. Without rigorous size estimation studies, we cannot know what proportion of the target populations are or are not being reached. It is critical to ascertain population size and develop new approaches designed to reach them, so that programs and institutions that serve these populations can reach the most vulnerable among them.

9.3.8 **Are We Reaching the Missing 55%?**

Fundamental to achieving the UNAIDS 90-90-90 target is to go beyond simply engaging individuals in HTS, but also engaging at-risk individuals who have not previously tested for HIV or who are not routinely engaged in HTS. In Sub-Saharan Africa, approximately 55% of HIV-infected individuals are unaware of their HIV status. Ultimately, these are the individuals who we should be targeted with improved, more acceptable, and more accessible modalities of HTS. Little research or programming has explored whether uptake of testing was among first-time testers or those who had not tested recently, and exploration of testing by risk behavior is limited. Furthermore, none of the research and programming explored HIV case diagnosis; that is, whether the intervention being evaluated identified new cases of HIV. With any investment in new HTS strategies, the overarching goal is to create opportunities to test individuals who are not already engaged in available HTS, or to engage individuals in a more cost-effective manner. This more nuanced perspective was not explored, and we recommend developing strategies to disentangle the proportion of new testers or uptake of routine testing and linkage.

9.3.9 **Defining and Measuring Linkage to Post-Test Services**

Linkage to post-test services was not well defined across studies, and few studies attempted to measure linkage. Linkage can have multiple meanings, including repeat testing, measurement of CD4 count, initiating ART, or attending VMMC services. To ensure we are comparing like with like, it is important to be explicit about how linkage is being defined and why. Additionally, accurate measurement of linkage to post-test services is challenging. Consequently, it is difficult to determine with any certainty how successfully individuals are
linking to post-test services following many HIV testing strategies. HTS that combines testing and post-test services in one location represents the easiest environment to track linkage. However, most existing testing strategies require referral to at least some post-test service options. Once a client is referred elsewhere, tracking them is typically fraught with uncertainty. We recommend exploring innovative and effective strategies to improve measurement of linkage to post-test services.

9.3.10 Cost-effectiveness

Data on the cost-effectiveness of programming for the target populations in this review were entirely absent. Through key informant interviews, we identified a small number of ongoing programs and studies with planned costing or cost-effectiveness analyses. However, to date, no data were available. Consequently, we recommend routine inclusion of a cost-effectiveness component in research and programming to engage hard-to-reach populations in HTS in order to make informed decisions on implementation and scale-up of promising strategies. Currently, it is common in research and programming to seek funding for a cost-effectiveness analyses as a separate component from intervention funding, presumably as many funding agencies would prefer to invest in cost-effectiveness once effectiveness has been established. A new suite of hybrid effectiveness-implementation designs, whereby implementation includes an understanding of cost and cost-effectiveness, have been proposed. These may be appropriate in some scenarios to accelerate the research paradigm to more quickly address the “science to service” gap. We recommend that funding agencies include support for cost-effectiveness analyses as part of routine intervention evaluation.

9.4 Next Steps

In the past decade, the landscape of the HIV epidemic in Sub-Saharan Africa has changed dramatically. Many countries have made gains toward ending the epidemic with increased testing, reductions in HIV prevalence, and an ever-increasing number of HIV-infected individuals on treatment. This reflects, among other things, how the sustained investments and increased political leadership for the HIV response are paying dividends. However, while greater control of the epidemic has been seen overall, certain sub-populations remain at high risk for HIV transmission, including the five target populations in this review, whose access to and engagement in HTS and other HIV services is often suboptimal. To meet the ambitious UNAIDS 90-90-90 target, which is fundamental to ending the HIV epidemic, this inequity must be addressed.

Engagement in HTS is the critical first step and the biggest gap in the 90-90-90 target for HIV elimination. This landscape review offers insight into policy, barriers, facilitators, and ongoing programming around HTS among the target populations and in the focal countries of interest. The resulting recommendations serve as a path forward to address this critical gap.
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HIV Testing: A Review of Research, Policy and Programming


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Appendix A:
Search Strategies

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<tr>
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<th>Search Strategy</th>
<th>Citations</th>
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| PubMed             | ("prostitution" OR prostitut* OR "sex work" OR "sex workers" OR "transactional sex" OR "commercial sex" OR "sex industry" OR "sex tourism" OR "sex trade" OR (sell* AND "sex") OR "paid sex" OR "sex for money" OR "survival sex" OR "sexual exploitation" OR ("exchange" OR "exchanged") AND "sex") OR traffic*) AND ("Acquired Immunodeficiency Syndrome" OR "HIV" OR "AIDS") AND ("test" OR "tests" OR "testing" OR screen* OR "HCT" OR "HTC" OR "HTS" OR "diagnosis" OR "diagnose" OR "diagnosed" OR counsel* OR "Counseling" OR "VCT" OR link* OR "treatment" OR "TASP" OR "PITC" OR "PICT" OR "pre-art" OR "patient tracking" OR "cascade" OR "continuum of care" OR ("continuity" AND "care") OR "prevention of mother to child transmission" OR "PMTCT" OR (engag* AND "care") OR "notification" OR "program" OR "intervention") AND ("Kenya" OR "Malawi" OR ("South" AND "Africa") OR "South Africa" OR "Tanzania" OR "Zambia" OR "Zimbabwe") OR (Filter by Region/Country: Africa) AND (Language: English) AND (Years: [2010 TO 2016])) | 22 full texts evaluated |

<p>| POPLINE            | (prostitution* OR prostitut* OR &quot;sex work&quot; OR &quot;sex workers&quot; OR &quot;transactional sex&quot; OR &quot;commercial sex&quot; OR &quot;sex industry&quot; OR &quot;sex tourism&quot; OR &quot;sex trade&quot; OR (sell* AND &quot;sex&quot;) OR &quot;paid sex&quot; OR &quot;sex for money&quot; OR &quot;survival sex&quot; OR &quot;sexual exploitation&quot; OR (&quot;exchange&quot; OR &quot;exchanged&quot;) AND &quot;sex&quot;) OR traffic*) AND (&quot;Acquired Immunodeficiency Syndrome&quot; OR &quot;HIV&quot; OR &quot;AIDS&quot;) AND (&quot;test&quot; OR &quot;tests&quot; OR &quot;testing&quot; OR screen* OR &quot;HCT&quot; OR &quot;HTC&quot; OR &quot;HTS&quot; OR &quot;diagnosis&quot; OR &quot;diagnose&quot; OR &quot;diagnosed&quot; OR counsel* OR &quot;Counseling&quot; OR &quot;VCT&quot; OR link* OR &quot;treatment&quot; OR &quot;TASP&quot; OR &quot;PITC&quot; OR &quot;PICT&quot; OR &quot;pre-art&quot; OR &quot;patient tracking&quot; OR &quot;cascade&quot; OR &quot;continuum of care&quot; OR (&quot;continuity&quot; AND &quot;care&quot;) OR &quot;prevention of mother to child transmission&quot; OR &quot;PMTCT&quot; OR (engag* AND &quot;care&quot;) OR &quot;notification&quot; OR &quot;program&quot; OR &quot;intervention&quot;) AND (&quot;Kenya&quot; OR &quot;Malawi&quot; OR (&quot;South&quot; AND &quot;Africa&quot;) OR &quot;South Africa&quot; OR &quot;Tanzania&quot; OR &quot;Zambia&quot; OR &quot;Zimbabwe&quot;) OR (Filter by Region/Country: Africa) AND (Language: English) AND (Years: [2010 TO 2016])) | 7 included in review |</p>
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### Table A-1. Search Strategies (continued)

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## Appendix B: Reasons for Exclusion

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<th>Population</th>
<th>Full text articles reviewed</th>
<th>Results were not published or released between Jan 2010 and February 29, 2016</th>
<th>Research did not take place in Kenya, Malawi, South Africa, Tanzania, Zambia, or Zimbabwe</th>
<th>Target population was not MSM, SW, PWID, AGYW, or men.</th>
<th>Manuscript did not evaluate (a) facilitators or barriers to HIV testing and/or linkage to care OR (b) an intervention to impact HIV testing and/or linkage to care?</th>
<th>Evaluation was not among at least (a) 10 individuals for barriers/facilitators OR (b) 40 individuals and was not strictly qualitative in nature for HIV testing and/or linkage to care.</th>
<th>Article did not provide sufficient detail on the following in order to assess quality: (a) the exploration, evaluation or intervention, (b) the design and methods used, and (c) appropriate analysis of results</th>
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Articles could be excluded for more than one reason—first reason for exclusion only noted here
Appendix C:
Key Informant Interview Guide

Ongoing Research and Programming

Contact for interview:
Point of contact for research/programming (if different from above):
Country(ies) of implementation:
Region(s) within country (if relevant):
Funder(s):
Partners in research/programming:
Period of performance:
Target population(s):
Outcomes targeted:

Intervention(s):

1. Provide an overview description of your research/programming:
   a. Describe the formative work related to this research/programming?
      i. What was the impetus for the work (e.g., research gaps, national or funding priorities)? Describe who the key players were.
   b. Tell us about the evidence base for research/programming.
   c. What is the current status of the research programming?
   d. Description of the implementation process?
      i. What were some of the challenges (related to context, population, etc.)?
      ii. What have been some of the key successes (related to context, population, etc.)?
      iii. Were there key factors related to the implementation process that would be valuable for us to know? (things related to material resources, national and local policy, restrictions from funding agencies)

2. Please describe how this research/programming being evaluated.
   a. Is there anything we should know about the evaluation process?
   b. Describe any key decision-making or changes regarding study design.

3. Are results available?
   If yes, description of results to date:
   If no, when will results be available?

4. Are any papers, reports, presentations, abstracts, websites, etc. available?
   If yes, please provide documents, or otherwise indicate where/how can these be accessed:
Appendix D:
Key Informant Contact List

Irene Benech  CDC-Atlanta
Trista Bingham  CDC-Atlanta
Joe Barker  CDC-Kenya
Leonard Soo  CDC-Kenya
Eva Matiko  CDC-Tanzania
Euphemia Sibanda  CeSHHAR
Frances Cowan  CeSHHAR
Kumbirai Chatora (PSI Zim)  CeSHHAR
Webster Mahvu  CeSHHAR
Nelly Mugo  CSRT Kenya
Patrick Sullivan  Emory University
Bernard Ogwang  FHI 360
Chris Akolo  FHI 360
Jennifer Hegle  FHI 360
Melchiade Ruberintwari  FHI 360
David Barr  Fremont Center
Grace Muthumbi  International Medical Corp
Eunice Omanga  IRDO
Kawango Agot  IRDO
Hally Mahler  Jhpiego
Stefan Baral  Johns Hopkins
Elizabeth Bukusi  KEMRI
Aoife Doyle  LSHTM
Bernadette Henson  LSHTM
Debby Watson-Jones  LSHTM
Helen Weiss  LSHTM
Isolde Birdthistle  LSHTM
James Hargreaves  LSHTM
Jane Ferguson  LSHTM
Liz Corbett  LSHTM
Rashida Ferrand  LSHTM
Suzanna Francis  LSHTM
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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</thead>
<tbody>
<tr>
<td>Helen Ayles</td>
<td>LSHTM/ZAMBART</td>
</tr>
<tr>
<td>Miriam Taegtmeyer</td>
<td>LSTM</td>
</tr>
<tr>
<td>Michael Kiragu</td>
<td>LVCT Health</td>
</tr>
<tr>
<td>Melanie Drace</td>
<td>MATCH (SA)</td>
</tr>
<tr>
<td>Cassian Nyandindi</td>
<td>MoHSW (TZ)</td>
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<tr>
<td>Omary Ubugayu</td>
<td>MoHSW (TZ)</td>
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<td>Jessie Mbwambo</td>
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<tr>
<td>Duku Kilonzo</td>
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<tr>
<td>Fredrick Otieno</td>
<td>NRHS</td>
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<tr>
<td>Nancy Padian</td>
<td>OGAC</td>
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<tr>
<td>Mikaela Rejbrand</td>
<td>Pangaea</td>
</tr>
<tr>
<td>Nicole Haberland</td>
<td>Population Council</td>
</tr>
<tr>
<td>Richard Needle</td>
<td>previously OGAC &amp; CDC</td>
</tr>
<tr>
<td>Karin Hatzold</td>
<td>PSI</td>
</tr>
<tr>
<td>Stephano Gudukeya</td>
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</tr>
<tr>
<td>Alex Kral</td>
<td>RTI-International</td>
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<tr>
<td>Wendee Wechsberg</td>
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<tr>
<td>Andrew Lambert</td>
<td>TB/HIV Care Association</td>
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<tr>
<td>Amy Conroy</td>
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<td>Craig Cohen</td>
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<td>Eric Goosby</td>
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<td>Sheri Lippman</td>
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<td>Tim Lane</td>
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<td>Audrey Pettifor</td>
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<td>Fabienne Hariga</td>
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<td>Sylvie Bertrand</td>
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<tr>
<td>Vincent Wong</td>
<td>USAID</td>
</tr>
<tr>
<td>Sheryl McCurdy</td>
<td>UT-Houston</td>
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<tr>
<td>Peter Cherutich</td>
<td>UW</td>
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<td>Name</td>
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<tr>
<td>Cheryl Johnson</td>
<td>WHO</td>
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<tr>
<td>David Ross</td>
<td>WHO</td>
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<tr>
<td>Martina Penazzato</td>
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<tr>
<td>Rachel Baggaley</td>
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<tr>
<td>Francois Venter</td>
<td>Wits</td>
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<tr>
<td>Ann Kurth</td>
<td>Yale University</td>
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<tr>
<td>Doug Bruce</td>
<td>Yale University</td>
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<tr>
<td>Tsi Tsi Apollo</td>
<td>Zimbabwe Ministry of Health and Child Care</td>
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Appendix E:
Study Summary Tables
### Table E-1. Included Studies for Female Sex Workers

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year, Title</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
<th>Intervention Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Schwartz 2015</td>
<td>South Africa</td>
<td>Port Elizabeth</td>
<td>FSW ≥ age 18</td>
<td>410</td>
<td>Cross-sectional quantitative</td>
<td>Respondent-driven sampling</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Engagement in the HIV care cascade and predictors of uptake of antiretroviral therapy among female sex workers in Port Elizabeth, South Africa</td>
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<td></td>
<td><strong>Barriers/Facilitators:</strong> Among FSW, prior history of HIV testing and diagnosis was &gt; 80%.</td>
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<td>2</td>
<td>Bhattacharjee 2015</td>
<td>Kenya</td>
<td>Nairobi, Mombasa, Nakuru, Nyeri, Thika, Kisumu, Eldoret</td>
<td>FSW enrolled at 7 priority sites</td>
<td>3,448</td>
<td>National polling booth survey</td>
<td>2-stage stratified cluster sampling</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>Monitoring HIV prevention programme outcomes among key populations in Kenya: Findings from a national survey</td>
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<td></td>
<td><strong>Barriers/Facilitators:</strong> 93.9% of FSW reported ever having been tested for HIV and 72.4% reported being tested for HIV in the past 3 months.</td>
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<td>3</td>
<td>Lancaster 2016</td>
<td>Malawi</td>
<td>Lilongwe</td>
<td>FSW enrolled at venues where FSW work</td>
<td>200</td>
<td>Cross-sectional evaluation</td>
<td>Venue-based sampling</td>
<td>None</td>
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<td></td>
<td>The HIV care continuum among female sex workers: A key population in Lilongwe, Malawi.</td>
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<td><strong>Barriers/Facilitators:</strong> Among the HIV positive FSW, 20% were newly diagnosed (95% CI: 13%, 26%, n=27). Of these, 74% (95% CI: 54%, 89%, n=20) had tested negative previously, 19% (95% CI: 6%, 38%, n=5) had never tested, and 7% (95% CI: 1%, 24%, n=2) had tested but not received results. Among newly diagnosed FSW that had previously tested negative, the median time since last HIV test was 11 months (IQR: 3–17).</td>
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<td>4</td>
<td>Napierala Mavedzenge 2015</td>
<td>Zimbabwe</td>
<td>14 sites</td>
<td>FSW enrolled at 14 sites</td>
<td>2,722</td>
<td>Baseline survey for community randomized trial</td>
<td>Respondent-driven sampling</td>
<td>N/A for this analysis</td>
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<tr>
<td></td>
<td>Engagement in HIV care among young female sex workers in Zimbabwe</td>
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<td></td>
<td><strong>Barriers/Facilitators:</strong> HIV-negative women under 25 were moderately more likely to have tested in the past 6 months (75% vs. 68%, p=0.08). But among HIV-positive women, those under 25 were less likely to know their status (39% vs. 69%, p&lt;0.01) and to report ART use (58% vs 69%, p=0.05).</td>
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<td>5</td>
<td>Bengtson 2014</td>
<td>Kenya</td>
<td>Mombasa</td>
<td>FSW enrolled at community drop-in centers</td>
<td>818</td>
<td>Baseline interview for a longitudinal intervention</td>
<td>Baseline interview of longitudinal intervention</td>
<td>N/A for this analysis</td>
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<tr>
<td></td>
<td>Levels of alcohol use and history of HIV testing among female sex workers in Mombasa, Kenya</td>
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<td></td>
<td><strong>Barriers/Facilitators:</strong> Women who reported harmful alcohol consumption were 1.60 times as likely to have never tested for HIV, compared with women with lower alcohol consumption. Additionally, being age 31 or older was independently associated with never having tested for HIV (PR 1.98; 95% CI: 1.06, 3.70), whereas having at least one child (PR 0.39; 95% CI: 0.24, 0.64) was associated with previous HIV testing.</td>
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(continued)
### Table E-1. Included Studies for Female Sex Workers (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year, Title</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
<th>Intervention Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Beckham 2015</td>
<td>Tanzania</td>
<td>Southern Tanzania</td>
<td>FSW enrolled in entertainment venues</td>
<td>30 semi-structured interviews and 3 focus groups with 22 participants total</td>
<td>Cross-sectional qualitative</td>
<td>Purposeful sampling and snowball sampling</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td><em>If you have children, you have responsibilities: motherhood, sex work and HIV in southern Tanzania</em></td>
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<tr>
<td></td>
<td><strong>Barriers/Facilitators:</strong> Women with children expressed an increased desire to test for HIV because of having dependent children. HIV testing was seen as the initial step in accessing treatment if needed, to assure they were able to raise children into adulthood.</td>
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<tr>
<td>7</td>
<td>Scorgie 2013</td>
<td>Kenya and South Africa</td>
<td>Mombasa, Kenya; Hillbrow Johannesburg, Musina &amp; Thohoyandou in Limpopo Province, South Africa</td>
<td>FSW enrolled at urban sites</td>
<td>106 FSW</td>
<td>Cross-sectional qualitative interviews and focus groups</td>
<td>Snowball sampling</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td><em>We are despised in the hospitals: sex workers’ experiences of accessing health care in four African countries</em></td>
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<tr>
<td></td>
<td><strong>Barriers/Facilitators:</strong> Participants cited experiences of healthcare-worker hostility and even denial of treatment based on their sex worker status. Patients experienced lack of confidentiality when sex work is disclosed to providers. Sex work may even be disclosed to family members by healthcare providers, without patient consent. The impact of discrimination within healthcare settings was found to be a major qualitative theme, impacting sex workers’ willingness to get tested for HIV. Once diagnosed, stigma and discrimination impacted sex workers’ willingness to disclose their status and initiate treatment.</td>
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<tr>
<td>8</td>
<td>Mtetwa 2013</td>
<td>Zimbabwe</td>
<td>Harare</td>
<td>FSW referred from clinic</td>
<td>3 focus groups with 38 women</td>
<td>Focus group qualitative study</td>
<td>Random sampling from clinic records</td>
<td>None</td>
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<tr>
<td></td>
<td><em>“You are wasting our drugs”: Health service barriers to HIV treatment for sex workers in Zimbabwe.</em></td>
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<tr>
<td></td>
<td><strong>Barriers/Facilitators:</strong> While many FSW were receiving HIV testing, few took up referrals to HIV treatment services. Women reported active discrimination and humiliation within healthcare settings.</td>
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<tr>
<td>9</td>
<td>Beckham 2013</td>
<td>Tanzania</td>
<td>N/A</td>
<td>FSW and key informants (healthcare workers, NGO staff, bar owners/ managers and community leaders)</td>
<td>40 in-depth interviews and 5 focus groups with FSW and 47 key informant interviews</td>
<td>Qualitative study</td>
<td>N/A</td>
<td>None</td>
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<tr>
<td></td>
<td><em>“Where’s your husband?”</em>: Secrecy and discrimination in female sex workers’ healthcare seeking experiences in Iringa, Tanzania*</td>
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<tr>
<td></td>
<td><strong>Barriers/Facilitators:</strong> FSW rarely disclosed their occupation in healthcare settings for fear of discrimination, limiting the extent to which they can access appropriately tailored care and risk-reduction counseling.</td>
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### Table E-1. Included Studies for Female Sex Workers (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year, Title</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
<th>Intervention Implemented</th>
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<tr>
<td>10</td>
<td>Mack 2014</td>
<td>Kenya</td>
<td>Bondo and Rarieda Districts and rural communities in Nyanza province</td>
<td>Stakeholders from Ministry of Health, CBOs, faith-based organizations, health facilities, community groups, and NGOs</td>
<td>20</td>
<td>Focus group qualitative study</td>
<td>Purposeful sampling</td>
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<tr>
<td></td>
<td><strong>Barriers/Facilitators:</strong> From a provider perspective, stigma is a major barrier to FSW's willingness to be tested for HIV.</td>
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<td>11</td>
<td>Mwayuli 2014</td>
<td>Kenya</td>
<td>Mombasa region</td>
<td>Peer-targeted FSW</td>
<td>N/A</td>
<td>Qualitative study</td>
<td>N/A</td>
<td>Mobile outreach</td>
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<tr>
<td></td>
<td>Transforming space and time barriers into enablers for HIV testing and counseling among female sex workers using the Moonlight Outreach Model</td>
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<tr>
<td></td>
<td><strong>Outcomes:</strong> HIV testing and counseling, STI screening, condom/ lubricant distribution, gender-based violence awareness counseling, health education and referrals were provided at 36 mobile outreach locations in the Mombasa region of Kenya. 2,476 FSW were reached with HIV testing and counseling services. Qualitative data shows increased FSW-initiated demand for HIV testing and counseling as well as other services and referrals provided by mobile outreach.</td>
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<td>12</td>
<td>Phiri 2014</td>
<td>Malawi</td>
<td>Zomba District</td>
<td>FSW working near pubs and entertainment centers</td>
<td>N/A</td>
<td>N/A; program data</td>
<td>N/A</td>
<td>Mobile outreach</td>
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<td></td>
<td>Taking the AIDS fight a step further: Moonlight testing in Zomba District, Malawi</td>
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<td></td>
<td><strong>Outcomes:</strong> Moonlight outreach services established in hotspots near pubs and entertainment centers with collaboration from business owners and performers at local pubs. The program tested 423 clients, of which 48% were women. 67 women who reported being FSW tested positive at the site and were referred to the nearest health facility for CD4 testing and other linkage to care.</td>
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<td>13</td>
<td>Muthumbi 2013</td>
<td>Kenya</td>
<td>Homabay and Migori counties of Nyanza Province</td>
<td>FSW in high HIV burden areas</td>
<td>N/A</td>
<td>N/A; program data</td>
<td>N/A</td>
<td>Drop-in centers</td>
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<td></td>
<td>Expanding combination HIV prevention (CHP) interventions to female sex workers (FSWs) in high HIV burden settings through drop-in centers (DICEs)</td>
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<td><strong>Outcomes:</strong> FSW who receive combination HIV prevention services at the drop-in center numbered 1,145 in 2012 and 1,299 in 2013. Of the 2,569 FSW enrolled in the drop-in centers in 2013, 2,125 received HIV testing and counseling, 17% tested HIV positive, and 84% of those positive were enrolled into care/treatment.</td>
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<tr>
<td>Study ID</td>
<td>First Author, Year, Title</td>
<td>Country</td>
<td>Specific Area</td>
<td>Population</td>
<td>N</td>
<td>Design</td>
<td>Sampling</td>
<td>Intervention Implemented</td>
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<tr>
<td>14</td>
<td>Mohammed 2013 Impact of a peer-led drop-in center and MSM, FSWs Programme</td>
<td>Kenya</td>
<td>Nakuru</td>
<td>FSW</td>
<td>N/A</td>
<td>Baseline findings from ongoing operations research</td>
<td>N/A</td>
<td>Drop-in centers</td>
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<tr>
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<td><strong>Outcomes:</strong> After 3 months of operation, 2,500 FSW were served by this service model that emphasizes empowerment and community-based approaches to serving the most at-risk populations.</td>
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<tr>
<td>15</td>
<td>Hanisch 2014 Expanding integrated HIV and SRH service provision for female sex workers: Experiences from Zimbabwe</td>
<td>Zimbabwe</td>
<td>N/A</td>
<td>FSW</td>
<td>N/A</td>
<td>N/A; program data</td>
<td>N/A</td>
<td>Drop-in centers</td>
</tr>
<tr>
<td></td>
<td><strong>Outcomes:</strong> A drop-in and four outreach centers were created, staffed by nurses, outreach workers, and trained peer educators offering HIV testing and counseling, ART referral, and STI treatment, among other health services. Initial service uptake was high, and by 2013 six static drop-in centers and 30 outreach centers had been added. By late 2013, 12,383 unique FSW had accessed services, resulting in 33,151 client visits.</td>
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<tr>
<td>16</td>
<td>Cowan 2015 The price of selling sex: HIV among female sex workers — the context and public health response</td>
<td>Zimbabwe</td>
<td>N/A</td>
<td>FSW</td>
<td>N/A</td>
<td>N/A</td>
<td>Drop-in centers and mobile clinics</td>
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<tr>
<td></td>
<td><strong>Outcomes:</strong> By the end of 2014, the Sisters program had seen &gt;24,000 individual women at &gt;56,000 visits. They have conducted &gt;7,500 HIV tests, and &gt;3,200 women have been diagnosed HIV positive and referred for ART services.</td>
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<td>17</td>
<td>Ndeda 2013 The role of MARPs Task Force (MTFs) in creating an enabling environment for combination HIV prevention (CHP) service implementation among sex workers (SWs) in Western Kenya.</td>
<td>Kenya</td>
<td>Homabay and Migori counties</td>
<td>FSW and key stakeholders (NGOs, CBOs, bar and brothel owners, religious leaders)</td>
<td>N/A</td>
<td>N/A; program data</td>
<td>N/A</td>
<td>Most at-risk population task forces</td>
</tr>
<tr>
<td></td>
<td><strong>Outcomes:</strong> Task forces bring non-governmental organizations, community-based organizations, bar and brothel owners, sex workers, and religious leaders together to advocate for combination HIV prevention services among key populations and promote human rights and fight stigma. After task forces were established, FSW support group registration increased, sex worker reports of harassment by the policy reduced significantly, enrollment in care and treatment for FSW increased, as did retention.</td>
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</tbody>
</table>
### Table E-1. Included Studies for Female Sex Workers (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year, Title</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
<th>Intervention Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Nogoduka 2014</td>
<td>South Africa</td>
<td>N/A</td>
<td>Cross-agency partnership between government, civil society organizations, sex workers, and other stakeholders</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Programmatic framework</td>
</tr>
</tbody>
</table>

**Outcomes:** Development of a National Sex Worker Strategic Plan for policy makers, program managers, and other stakeholders to implement high quality HIV services for sex workers.

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year, Title</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
<th>Intervention Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Aungo 2014</td>
<td>Kenya Coast Province</td>
<td>N/A</td>
<td>Key population representatives, government officials, health practitioners, and religious leaders</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Thematic forums to address barriers to health services faced by key populations and Islamic protests against key population-focused interventions</td>
</tr>
</tbody>
</table>

**Outcomes:** Thematic forums brought stakeholders together to discuss interventions for key populations as community-wide health and rights issues and discuss the intersection of spiritual obligations and helping to prioritize HIV risk reduction. Forums resulted in facilitating Islamic faith-based organizations to provide services to key populations such as PWID and FSW; decreased faith-based protests, and decreased reported incidents of violence against MSM and FSW.
<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dijkstra, 2015</td>
<td>Sub-Saharan Africa, Kenya focus</td>
<td>Kenya and Sub-Saharan Africa overall</td>
<td>MSM</td>
<td>142 full-text articles met criteria</td>
<td>Literature review</td>
<td>Systematic review of MSM studies conducted in sub-Saharan Africa in 2011–2014</td>
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<tr>
<td></td>
<td><strong>Barriers:</strong> Broad societal homophobia found across literature review sources</td>
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</tr>
<tr>
<td></td>
<td><strong>Facilitators:</strong> Didactic content as well as opportunities for group reflection empower HCWs to discuss MSM behavior and anal sex</td>
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<tr>
<td>2</td>
<td>Mbote, 2014</td>
<td>Kenya</td>
<td>NA</td>
<td>Sex workers, MSM, prison populations, PWID</td>
<td>Analyzed 120 policy and program documents related to HIV and/or key populations</td>
<td>Policy analysis and advocacy decision model for HIV-related services; provides country stakeholders with tools to inventory, assess, and advocate policies that govern the accessibility and sustainability of services for key populations.</td>
<td>Using the model, the study team analyzed 120 policy and program documents related to HIV and/or key populations. The team also conducted three stakeholder meetings to assess the impact of existing policies on key populations in Kenya.</td>
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<tr>
<td></td>
<td><strong>Barriers:</strong> Criminalization, stigma, and discrimination can deter MSM from accessing HIV services and information. Furthermore, criminalization perpetuates stigma and discrimination against MSM.</td>
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<tr>
<td></td>
<td><strong>Facilitators:</strong> Effective HCT requires nonjudgmental support and high-quality services specifically designed to address the needs of MSM.</td>
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<tr>
<td></td>
<td><strong>Intervention Outcomes:</strong> The outcome was the cited work: Policy analysis and advocacy decision model for services for key populations in Kenya.</td>
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</tr>
<tr>
<td>3</td>
<td>Wirtz, 2013</td>
<td>Malawi</td>
<td>Blantyre</td>
<td>MSM</td>
<td>338</td>
<td>Cross-sectional, community-led survey of HIV prevalence and correlates of infection</td>
<td>RDS</td>
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<tr>
<td></td>
<td><strong>Barriers:</strong> The prevalence of perceived and experienced stigma exceeded 20% for almost all variables, 11.4% ever experienced physical violence, and 7% were ever raped.</td>
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</tbody>
</table>

(continued)
Table E 2. Included Studies for Men Who Have Sex With Men (MSM) (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Fay 2011</td>
<td>Malawi, Namibia, and Botswana</td>
<td>Blantyre and Lilongwe, Malawi; Windhoek, Namibia; and Gaborone, Botswana</td>
<td>MSM Malawi: 202, Namibia: 218, Botswana: 117</td>
<td>Cross-sectional, interviewer-administered survey, HIV screening using oral fluid test</td>
<td>Snowball sampling</td>
<td></td>
</tr>
</tbody>
</table>

**Barriers:** Strong associations observed between experiences of discrimination and fear of seeking healthcare services. 19% reported ever being afraid to seek healthcare. While over half (56%) had ever been tested for HIV, only 29% had ever been offered a test by a healthcare provider. A significant association was observed between ever receiving a recommendation for HIV testing and fear of seeking healthcare services (OR: 1.9; 95% CI: 1.2–3.0) and was also associated with being blackmailed on the basis of sexuality (OR: 1.8; 95% CI: 1.1–2.8).

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| 5        | Wirtz 2014         | Malawi | Blantyre | MSM, service providers | 8 MSM participants, 5 service providers | Qualitative in-depth interviews | Peer recruitment for MSM. Service providers were recruited from the district hospital, local health and STI clinics, and a HIV prevention service organization. |

**Barriers:** Disclosure fears among MSM; within the wider MSM community, general lack of HIV information for MSM, low awareness of appropriate prevention, and low perception of risks related to HIV infection. Service providers reported concerns of adverse repercussions related to the provision of services to men in same sex sexual relationships.

**Facilitators:** Awareness of HIV risk among some MSM

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| 6        | Langen 2014        | Botswana, Namibia, South Africa, Lesotho, Swaziland, Mozambique, Zimbabwe, Zambia, Malawi | NA | MSM, WSW, and transgender people | 15 LGBT organizations and their outreach to over 2,500 LGBT people in 27 locations | Quantitative and qualitative surveys, focus group discussions and key informant interviews; most assessments also included in-depth assessments of knowledge, attitudes and underlying perceptions of HCPs. Organizations were trained on conducting needs assessments and mentored in survey development and data analysis. | Snowball sampling |

**Barriers:** Key determinants and factors identified included low testing levels for HIV/STIs, limited knowledge on safer sex practices, limited risk awareness, inaccessibility of barrier methods like dental dams and condom-compatible lubricants, low negotiating skills on safer sex especially when engaging in transitional sex, substance use, low self-efficacy and self-worth. Some participants reported being denied health services. The research also demonstrated delayed health seeking behavior because of real or perceived negative attitudes of HCPs, fear of being reported to authorities and limited confidentiality expected or experienced. The HCP assessment showed a uniform pattern of low levels of knowledge on sexual diversity and high levels of negative attitudes toward sexual minorities.
<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Macharia 2014</td>
<td>Kenya</td>
<td>Five regions, unspecified</td>
<td>MSM sex workers</td>
<td>80</td>
<td>Study to identify the needs of the MSW community via focus discussion groups and in-depth interviews.</td>
<td>Unspecified</td>
</tr>
<tr>
<td>8</td>
<td>Harper 2015</td>
<td>Kenya</td>
<td>Nine communities in Western Kenya</td>
<td>GBMSM</td>
<td>511</td>
<td>Cross-sectional audio computer-assisted self-interviewing survey</td>
<td>Community-based mobilization recruitment</td>
</tr>
<tr>
<td>9</td>
<td>Knox 2011</td>
<td>South Africa</td>
<td>Pretoria</td>
<td>MSM</td>
<td>300</td>
<td>Cross-sectional computer-assisted self-interviewing</td>
<td>Multiple community-based recruitment strategies</td>
</tr>
<tr>
<td>10</td>
<td>Nel 2013</td>
<td>South Africa</td>
<td>Provinces of Gauteng, KwaZulu-Natal and Western Cape</td>
<td>MSM</td>
<td>1,045</td>
<td>Cross-sectional survey (self-completed except in cases of non-literacy)</td>
<td>Convenience sampling via CBOs; quotas based on age, race and socioeconomic status</td>
</tr>
<tr>
<td>11</td>
<td>Macharia 2014</td>
<td>Kenya</td>
<td>Five regions, unspecified</td>
<td>MSM sex workers</td>
<td>80</td>
<td>Study to identify the needs of the MSW community via focus discussion groups and in-depth interviews.</td>
<td>Unspecified</td>
</tr>
</tbody>
</table>

**Barriers:** Intense stigma and discrimination from public health care providers and family members were reported by all participants. This posed access barriers to HIV related care and treatment services. Internalized stigma in the form of self-hatred, shame, and low self-esteem is rampant. Hence majority avoided seeking medical care, getting tested for HIV, and/or going for other routine tests. Majority of the male sex workers had suffered physical, emotional, and sexual violence. All HIV positive male sex workers reported suffering multiple stigmas due to their status and work from members of the gay community and general population.

**Facilitators:**

- Every unit increase in LGB identity superiority was associated with a 0.03 unit increase in HIV testing ($\beta = 0.16$, $t(377) = 2.11$, $P = 0.036$), and every unit increase in LGB difficult process was associated with a 0.04 unit increase in HIV testing ($\beta = 0.17$, $t(377) = 2.69$, $P = 0.008$).

- Socially vulnerable situations: being black and living in a township (aOR=0.29, 95% CI: 0.15–0.57), having lower income (aOR=0.33, 95% CI: 0.12–0.87), having internalized homophobia (aOR=0.63, 95% CI: 0.43–0.94), and being MSM while not self-identifying as gay (aOR=0.21, 95% CI: 0.11–0.84) all corresponded with lower likelihood of ever testing or of repeat testing. Lack of HIV knowledge was also negatively associated with having ever been tested for HIV (aOR=0.90, 95% CI: 0.80–1.00).

- Unexpectedly, having tested multiple times was positively associated with lack of social support (aOR=1.86, 95% CI: 1.06–3.26).

- Fear of being tested for HIV was positively associated with being black, coloured or Indian, preferred gender expression as feminine, being sexually active, a history of STIs, and experience of victimization on the basis of sexual orientation (aOR=2.90, 4.07, 4.62, 5.05, and 2.34, respectively).

**Barriers:** Self-reported reasons for not testing included looked healthy (64.7%), were afraid of the result (28.4%), or were ashamed (6.8%). Of these, 14.8% reported discrimination as a barrier in accessing HIV testing services.

**Facilitators:** Odds of testing increased with age ($p<0.001$) and educational level ($p=0.002$); and the belief that it is important to be HIV tested in spite of looking healthy ($p=0.004$).
**Table E 2. Included Studies for Men Who Have Sex With Men (MSM) (continued)**

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
<th>Facilitators</th>
<th>Barriers</th>
<th>Intervention Implemented</th>
<th>Intervention Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Okall 2014</td>
<td>Kenya</td>
<td>Kisumu</td>
<td>MSM</td>
<td>43</td>
<td>Two-phase formative study with individual interviews (n=15) and a structured survey (n=51) to assess MSM comfort in accessing health services and willingness to participate in HIV prevention research</td>
<td>Peer contact or snowball method for both individual interviews (n=15) and a structured survey (n=51)</td>
<td>Every unit increase in LGB identity superiority was associated with a 0.03 unit increase in HIV testing ($β$ = 0.16, $t$(377) = 2.11, $P$ = 0.036), and every unit increase in LGB difficult process was associated with a 0.04 unit increase in HIV testing ($β$ = 0.17, $t$(377) = 2.69, $P$ = 0.008).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Stephenson 2014</td>
<td>USA, Canada,</td>
<td>Countrywide</td>
<td>Australia: 407; Brazil: 558; Canada: 344; South Africa: 504; Thailand: 473; UK: 466; USA: 415</td>
<td>Cross-sectional, online survey</td>
<td>Recruited through advertisements on Facebook.com</td>
<td>MSM in South Africa who reported more internalized homophobia were less likely to report willingness to use CVCT (OR: 0.9, 95% CI: 0.9–0.9)</td>
<td>MSM in South Africa who reported recent unprotected anal intercourse were more likely to report willingness to use CVCT.</td>
<td></td>
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</tr>
<tr>
<td>14</td>
<td>Sandfort 2015</td>
<td>South Africa</td>
<td>Tshwane townships</td>
<td>MSM</td>
<td>81</td>
<td>Qualitative single-round in-depth interviews</td>
<td>Convenience sample</td>
<td>Discomfort accessing testing services, fear of positive result. Results suggest social support, making testing routine might improve test seeking behavior.</td>
<td>Ever testing before and anxiety about risky behavior improves odds of testing.</td>
<td>Peer-educator training and outreach (40 educators trained)</td>
<td>Peer-educator outreach, HIV counselling and testing</td>
</tr>
<tr>
<td>15</td>
<td>Geibel 2012</td>
<td>Kenya</td>
<td>Mombasa</td>
<td>MSM sex workers</td>
<td>Baseline: 425; Post-intervention: 442</td>
<td>Quasi-experimental (control location without intervention)</td>
<td>Time-venue baseline and post-intervention survey sampling</td>
<td></td>
<td></td>
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</tbody>
</table>
Table E 2. Included Studies for Men Who Have Sex With Men (MSM) (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Wagenaar 2012</td>
<td>USA, South Africa</td>
<td>Online</td>
<td>MSM</td>
<td>USA: 1154, South Africa: 439</td>
<td>Cross-sectional online survey</td>
<td>Recruited through Facebook.com</td>
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</tr>
<tr>
<td></td>
<td><strong>Barriers:</strong> Low levels of HIV knowledge</td>
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</tr>
<tr>
<td>17</td>
<td>van Rooyen 2015</td>
<td>Kenya, Malawi, South Africa</td>
<td>NA</td>
<td>Government policymakers, academics, activists, donors, procurement specialists, laboratory practitioners and health providers</td>
<td>Kenya: 16, Malawi: 26, South Africa: 12</td>
<td>Fifty-four key informant interviews; first part of a two-phase study. (The second phase evaluated the usability of HIV self-test prototypes by lay users.)</td>
<td>Purposively sampled in order to achieve a range of different perspectives of those working in HIV programming, including those with decision-making authority regarding HIV testing strategy and policy; HIV test procurement, and researchers</td>
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<td></td>
<td><strong>Barriers:</strong> Further research, policy and ensuing guidelines should consider how to regulate, market and distribute HIV self-testing, ensure quality assurance of tests and human rights; and critically, link testing to appropriate support and treatment services. Low literacy levels in some target groups would also need context-specific consideration before scale-up.</td>
<td></td>
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<td></td>
<td><strong>Facilitators:</strong> Respondents welcomed the idea of an accurate, easy-to-use, rapid HIV self-test which could increase testing across all populations. High-risk groups, such as men, MSM, couples and young people in particular, could be targeted through a range of health facility and community-based distribution points. HIV self-testing is already endorsed in Kenya, and political support for scale-up exists in South Africa and Malawi.</td>
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<tr>
<td>18</td>
<td>Johnston 2010</td>
<td>Tanzania Unguja, Zanzibar</td>
<td>MSM IDU</td>
<td>509</td>
<td>Cross-sectional, face-to-face survey-interviews and HIV testing</td>
<td>RDS</td>
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<td></td>
<td><strong>Barriers:</strong> Among the 509 MSM who enrolled in the survey, 14% (n=66) reported injecting drugs in the past 3 months. MSM-IDU were less likely to know where to get a confidential HIV test and to have ever been tested for HIV compared to MSM who did not inject drugs.</td>
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<tr>
<td>19</td>
<td>Tun 2012</td>
<td>South Africa Pretoria City and Attridgeville township</td>
<td>MSM</td>
<td>324</td>
<td>Cross-sectional survey via face-to-face interview</td>
<td>RDS</td>
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<tr>
<td></td>
<td><strong>Barriers:</strong> Conspiracy beliefs and potentially mistrust in government institutions and healthcare</td>
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(continued)
### Table E 2. Included Studies for Men Who Have Sex With Men (MSM) (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Obermeyer 2013</td>
<td>Burkina Faso, Kenya, Malawi, and Uganda</td>
<td>NA</td>
<td>MSM, sex workers, IDUs, and prisoners</td>
<td>Not available</td>
<td>Literature review</td>
<td>Nonsystematic search of HIV testing published and gray literature on Burkina Faso, Kenya, Malawi, and Uganda (period criteria undefined).</td>
</tr>
</tbody>
</table>

**Barriers:** NGO workers noted the need for human rights programs to address the complex drivers of the HIV epidemic; they struggled to tailor them to the Zambian context because of donor stipulations.

**Facilitators:** Developing effective HIV-prevention strategies requires careful dialogue with vulnerable groups and greater flexibility for context-specific implementation rather than a one-size-fits-all conceptualization of human rights.

**Intervention Outcomes:** NGO workers noted the need for human rights programs to address the complex drivers of the HIV epidemic, but they struggled to tailor them to the Zambian context because of donor stipulations. However, MSM embraced the rights approach because it promoted social change and provided a platform for challenging discrimination and promoting community mobilization. Yet, MSM were critical of its overly confrontational implementation in opposition to traditional cultural and religious values.

| 21       | Muzyamba 2015      | Zambia | Lusaka | MSM, women, youth | FGDs: 23 women, youth, and MSM; IDIs: 10 employees | FGDs with MSM, women, youth; IDIs with intervention staff | Convenience via Lusaka-based NGOs |

**Intervention Implemented:** Activities organized by local NGOs using rights-based approaches

**Barriers:** Further research, policy and ensuing guidelines should consider how to regulate, market and distribute HIV self-testing, ensure quality assurance of tests and human rights; and critically, link testing to appropriate support and treatment services. Low literacy levels in some target groups would also need context-specific consideration before scale-up.

**Facilitators:** Respondents welcomed the idea of an accurate, easy-to-use, rapid HIV self-test which could increase testing across all populations. High-risk groups, such as men, MSM, couples and young people in particular, could be targeted through a range of health facility and community-based distribution points. HIV self-testing is already endorsed in Kenya, and political support for scale-up exists in South Africa and Malawi.

| 22       | Sanders 2011       | Kenya | Kilifi district | MSM and women who reported transactional sex work and seroconverted during cohort | 60 men, 12 women | Prospective open cohort study of men and women at risk for HIV-1 acquisition | Volunteers who seroconverted between July 2005 and October 2010 were enrolled in the acute HIV-1 infection (AHI) cohort |

**Barriers:** AHI patients often receive presumptive malaria treatment during peak transmission risk period (40%), although only about a quarter of those were tested for malaria (all of whom tested negative). AHI was only suspected in 12% of patients who presented for urgent care.

**Facilitators:** Patients seek healthcare during AHI febrile illness that can facilitate identifying them during peak transmission risk period. Prior to HIV diagnosis, 75% of patients reported fever and 69% sought urgent care for symptomatic illness.

(continued)
Table E 2. Included Studies for Men Who Have Sex With Men (MSM) (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>Taegtmeyer 2013</td>
<td>Kenya</td>
<td>Mombasa</td>
<td>Kenyan providers in a research clinic targeting MSM</td>
<td>13 counsellors and 3 clinicians</td>
<td>In-depth interviews</td>
<td>At a single clinic, all counsellors and clinicians regularly involved in conducting HIV-1 counselling and testing, risk assessment, and screening for or treatment of STIs were interviewed.</td>
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<tr>
<td><strong>Barriers:</strong></td>
<td>Provider discomfort with MSM, lack of comprehensive training</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Facilitators:</strong></td>
<td>Targeted training for healthcare workers providing services to MSM, specifically on sensitivity regarding MSM behavior and counseling techniques.</td>
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</tr>
<tr>
<td>24</td>
<td>van der Elst 2013</td>
<td>Kenya</td>
<td>Four districts in coastal Kenya: Kilifi, Kilindini, Malindi and Mombasa</td>
<td>Healthcare workers from 49 ART-providing health facilities: 22 clinicians, 43 nurses and counselors, and 9 administrators/managers</td>
<td>74</td>
<td>Eight focus group discussions with program participants prior to and 3 months after completing the training program.</td>
<td>To recruit trainee participants, NASCOP issued announcements to 49 health facilities providing ART in the four targeted districts. Those who enrolled received 2000 Kenya shilling (approximately US $24) for travel and lodging adjacent to the training facility in Kilifi.</td>
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<tr>
<td><strong>Intervention Implemented:</strong></td>
<td>Two-day residential program involving computer-facilitated training and group discussions on HIV and MSM.</td>
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<tr>
<td><strong>Barriers:</strong></td>
<td>Secondary stigma, lack of professional education about MSM, and personal and social prejudices</td>
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<tr>
<td><strong>Facilitators:</strong></td>
<td>Healthcare worker training to address their stigma against MSM and generate understanding of MSM healthcare needs</td>
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<tr>
<td>25</td>
<td>van der Elst 2013</td>
<td>Kenya</td>
<td>Four districts in coastal Kenya: Kilifi, Kilindini, Malindi, and Mombasa</td>
<td>Healthcare workers from 49 ART-providing health facilities: 22 clinicians, 43 nurses and counselors, and 9 administrators/managers</td>
<td>74</td>
<td>To assess baseline levels of knowledge, study conducted pre-course assessment, immediate post-course assessment, and 3-month-postcourse assessment, all using the same 24-item multiple-choice test covering key learning outcomes across the course material, and they completed a 25-item Homophobia Scale. The results of pre-training and post-training assessments were not communicated to participating healthcare workers.</td>
<td>To recruit trainee participants, NASCOP issued announcements to 49 health facilities providing antiretroviral treatment in the four targeted districts. Those who enrolled received 2000 Kenya shilling (approximately US $24) for travel and lodging adjacent to the training facility in Kilifi.</td>
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<tr>
<td><strong>Barriers:</strong></td>
<td>Most healthcare workers had limited knowledge of MSM sexual health needs; homophobic attitudes.</td>
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<tr>
<td><strong>Facilitators:</strong></td>
<td>MSM sensitivity training for African healthcare workers.</td>
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<tr>
<td><strong>Intervention Outcomes:</strong></td>
<td>Three months after training, more healthcare workers had adequate knowledge compared with baseline (49% vs. 13%, McNemar’s test p&lt;0.001); this was most pronounced in those with clinical or administrative roles and in those from governmental health providers. Compared with baseline, homophobic attitudes had decreased significantly 3 months after training, particularly among healthcare workers with high homophobia scores at baseline, and there was some evidence of correlation between improvements in knowledge and reduction in homophobic sentiment. Scaling up MSM sensitivity training for African healthcare workers is likely to be a timely, effective and practical means to improve relevant sexual health knowledge and reduce personal homophobic sentiment among healthcare workers involved in HIV prevention, testing and care in Sub-Saharan Africa.</td>
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</tbody>
</table>
Facilitators: Analysis of the reasons for seeking HIV testing revealed several types of rationale. The reasons for a first HIV test were frequently one-time occurrences, such as a requirement prior to circumcision, or motivations likely satisfied by a single HIV test. For MSM who reported repeat testing at more timely intervals, the most common rationale was seeking test results with a sex partner.

Intervention Implemented: Boithato HIV prevention intervention for South African MSM; aims in part to encourage greater uptake of both regular HIV testing and treatment

Barriers: In multivariate modeling, predictors of never testing were UAI (OR=0.57, 95% CI 0.36-0.89) and no perception of status (OR = 6.11, 95% CI 2.4-15.5).

Facilitators: Predictor of regular testing was UAI (OR=1.79, 95% CI 1.22-2.63), meaning MSM who are able disclose risk behavior are more likely to test regularly.

Intervention Outcomes: Reported in IAS 2015 conference abstract, detailed in this table (Lane 2015).

Intervention Implemented: Six-month pilot program trained 5 community leaders who, along with staff, provided HIV-prevention information and supplies to MSM through small-group meetings, community-based social activities, and inter-community events

Facilitators: Small-group meetings, community-based social activities, and inter-community events

Intervention Outcomes: Social activities and group meetings were viable strategies for disseminating HIV-prevention information to MSM. Many MSM were also able to receive social support, reduce social isolation, and improve their self-esteem.

(continued)
### Table E 2. Included Studies for Men Who Have Sex With Men (MSM) (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>Wirtz 2015</td>
<td>Malawi</td>
<td>Blantyre</td>
<td>MSM</td>
<td>103</td>
<td>Prospectively designed cohort; participants completed sociobehavioral surveys and HIV testing at each of the 3 follow-up study visits.</td>
<td>CHPI participants were recruited from the pool of MSM who participated in the baseline study that used RDS. Eligible individuals were invited from the baseline study to participate in the 12-month prospective study.</td>
</tr>
</tbody>
</table>

**Intervention Implemented:** CHPI was a community-based intervention, which aimed to target and mitigate the structural-, social-, and individual-level barriers to HIV prevention found to be associated with higher HIV risks among MSM in Malawi.

**Facilitators:** Leveraging peer-based interventions via CBOs to recruit and retain MSM in HIV prevention and treatment interventions in stigmatizing settings

**Intervention Outcomes:** Approximately 90% of participants attended each study visit and 93.2% (n = 96) completed the final visit. Participants met with peer educators a median of 3 times (range: 1–10) in the follow-up visits 2 and 3. High proportions reported discussing HIV testing with peer educators during contacts (follow-up 1: 69.2%, follow-up 2: 88.5%, follow-up 3: 81.6%; P < 0.001).

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</thead>
<tbody>
<tr>
<td>30</td>
<td>Lane 2014</td>
<td>South Africa</td>
<td>Gert Sibande and Ehlanzeni</td>
<td>MSM</td>
<td>307</td>
<td>Cross-sectional baseline survey (interview-administered computer-assisted interview) and HIV testing using rapid test kits in intervention and comparison communities</td>
<td>RDS (independent for baseline vs. follow-up surveillance)</td>
</tr>
</tbody>
</table>

**Intervention Implemented:** Boithato HIV prevention intervention for South African MSM; aims in part to encourage greater uptake of both regular HIV testing and treatment

**Facilitators:** Implementation of Boithato (mobilizing MSM peer support for HIV testing) was associated with increased regular testing among MSM in nonstigmatizing, trained MSM-competent clinical settings in a high-incidence community

**Intervention Outcomes:** Reported in IAS 2015 conference abstract, detailed in this table (Lane 2015).

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<th>Study ID</th>
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<tr>
<td>31</td>
<td>Lane 2015</td>
<td>South Africa</td>
<td>Gert Sibande and Ehlanzeni</td>
<td>MSM</td>
<td>307</td>
<td>Cross-sectional baseline survey (interview-administered computer-assisted interview) and HIV testing using rapid test kits in intervention and comparison communities</td>
<td>RDS (independent for baseline vs. follow-up surveillance)</td>
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**Intervention Implemented:** Boithato HIV prevention intervention for South African MSM; aims in part to encourage greater uptake of both regular HIV testing and treatment

**Facilitators:** Implementation of Boithato (mobilizing MSM peer support for HIV testing) was associated with increased regular testing among MSM in nonstigmatizing, trained MSM-competent clinical settings in a high-incidence community

**Intervention Outcomes:** Over 12 months, there was a nearly fourfold increase in regular testing in Gert Sibande (20.2% to 49.8%; OR 3.7, 95% CI 2.6-5.5, p < .001), and a decrease in Ehlanzeni (26.5% to 22.1%; OR 0.6, 95% CI 0.4-0.9, p < .05). Increase over baseline in the intervention community was six times greater than the comparison (OR 6.0, 95% CI 3.5-10.3, p < .001). Additionally, more HIV positives in Gert Sibande were linked to care at 12-month follow-up than in Ehlanzeni (28.3% versus 12.9%).

(continued)
### Table E 2. Included Studies for Men Who Have Sex With Men (MSM) (continued)

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>Anthony 2014</td>
<td>Kenya</td>
<td>29 counties in 80 partner locations</td>
<td>MSM, FSW, PWID</td>
<td>NA, reviewed country-wide surveillance efforts</td>
<td>Technical Support Unit was set up within the Ministry of Health to support efforts in delivering effective and efficient HIV prevention programs. 11 people were hired to support the ministry of health. Five staff were placed regionally to provide supportive supervision to implementing partners. Field visits were done for 361 days in 29 counties in 80 partner locations coupled with 56 on-site training. MoH held quarterly feedback meetings with the implementing partners.</td>
<td>Evaluation of national surveillance efforts</td>
</tr>
<tr>
<td>33</td>
<td>Singh 2012</td>
<td>Kenya</td>
<td>Malindi, Nanyuki and Rachounyo</td>
<td>Malindi: MSM =262, Malindi: IDU =154, Malindi: General =623; Rachounyo =599; Nanyuki =600</td>
<td>307 in Gert Sibande; 298 in Ehlanzeni</td>
<td>Within each of these priority prevention areas, community informants identified venues where people meet new sex partners, collected information about the characteristics of the venues and the individuals attending the venues, then recruited for survey and testing.</td>
<td>RDS (independent for baseline vs. follow-up surveillance)</td>
</tr>
<tr>
<td>34</td>
<td>Stephenson 2012</td>
<td>South Africa</td>
<td>Countrywide</td>
<td>MSM</td>
<td>486</td>
<td>Cross-sectional, online survey</td>
<td>Recruited through advertisements on Facebook.com</td>
</tr>
</tbody>
</table>

#### Facilitators: Embedding Technical Support Units within Government structures improves efficiency and effectiveness of key population programming and provides in-house quality managerial and technical talent.

#### Intervention Outcomes: Key population reporting increased from 52 % (Jan-Mar 2013) to 92 % in the third quarter (Jul-Sep 2013). Through supportive supervision, quarterly contacts with FSW and MSM improved from 31 % to 71 % and 23 % to 55 % respectively. Uptake of HIV Counselling and testing services by FSW and MSM improved from 7 % to 24 % and 2 % to 14 % respectively. This was achieved against the national KP estimates of 131,626 FSWs and 19,998 MSMs.

#### Intervention Implemented: Venue-based HIV VCT

#### Facilitators: High level of acceptability of VCT

#### Intervention Outcomes: Approximately 98 % of IDUs and 97 % of MSM agreed to VCT, whereas acceptability of VCT in the general, non-MSM, non-IDU population ranged from 60 % in Malindi to 48 % in Nanyuki.

#### Barriers: MSM who reported higher numbers of completed school years were less likely to report willingness to use CVCT.

#### Facilitators: The willingness to utilize CVCT services was compellingly high (89 %) among this sample of mostly White/European African (89 %) and HIV-negative (83 %) men.
### Table E 2. Included Studies for Men Who Have Sex With Men (MSM) (continued)

<table>
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<tr>
<th>Study ID</th>
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</thead>
<tbody>
<tr>
<td>35</td>
<td>Stephenson 2013</td>
<td>South Africa Cape Town and surrounding townships</td>
<td>MSM</td>
<td>71 (42 in focus group discussions and 29 in in-depth interviews)</td>
<td>Seven focus group discussions and 29 in-depth interviews</td>
<td>Venue-based sampling that focused on community-based organizations with strong connections to various MSM subpopulations</td>
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<tr>
<td><strong>Facilitators</strong>: Participants exhibit overwhelmingly high acceptance of CVCT, attracted to the counseling components of the service.</td>
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<tr>
<td>36</td>
<td>Wahome 2013</td>
<td>Kenya Coastal Kenya</td>
<td>MSM</td>
<td>Characteristics reported at 73 acute and AEHI visits were compared with characteristics reported at 6458 scheduled cohort visits.</td>
<td>Quasi-experimental prospective cohort; compared characteristics reported at AEHI visits to those reported at all seronegative visits to validate the UMRSS and compare it to a cohort-derived risk screening score. HIV-1 seroconversion was diagnosed using two rapid test kits.</td>
<td>Enrolled HIV-seronegative MSM in a cohort study of HIV-1 acquisition</td>
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<tr>
<td><strong>Intervention Implemented</strong>: UMRSS for detection of AEHI; men made either monthly or quarterly scheduled visits at which risk reduction counseling was provided and a medical history and physical examination was performed.</td>
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<tr>
<td><strong>Facilitators</strong>: Screening for AEHI will have substantial transmission prevention benefits.</td>
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<tr>
<td><strong>Intervention Outcomes</strong>: Three components of the UMRSS (fever, diarrhea, and discordant rapid HIV tests) were independent predictors of AEHI. The predictive ability of the UMRSS was 0.79. A cohort-derived risk score consisting of six characteristics (fever, diarrhea, discordant rapid HIV tests, fatigue, age &lt;30 years, and symptomatic sexually transmitted disease) had a higher area under the receiver operating characteristic curve of 0.85. Screening for AEHI will have substantial transmission prevention benefits.</td>
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<tr>
<td>37</td>
<td>van der Elst 2015</td>
<td>Kenya Kilifi and Mombasa counties</td>
<td>Healthcare providers from 25 facilities, county AIDS coordinators, and MSM from local support groups</td>
<td>63</td>
<td>10 focus group discussions to explore the provision of MSM healthcare services 2 years post-training</td>
<td>Three groups of respondents were recruited: (1) healthcare providers who completed the original MSM online training program 2 years ago, presently providing clinical services to MSM in the study area; (2) MSM involved in local community-based MSM organizations (CBOs); and (3) local policymakers, referred to as county AIDS and STI coordinators (CASCOS).</td>
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<tr>
<td><strong>Intervention Implemented</strong>: Two-day residential program involving computer-facilitated training and group discussions on HIV and MSM.</td>
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<tr>
<td><strong>Facilitators</strong>: Online MSM training program (<a href="http://www.marps-africa.org">www.marps-africa.org</a>)</td>
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<tr>
<td><strong>Intervention Outcomes</strong>: Healthcare providers described continued improvements in their ability to provide service in a non-stigmatizing way to MSM patients since completing the training program and expressed comfort engaging MSM patients in care. Four additional recommendations for improving MSM healthcare services were identified: (1) expanding the reach of MSM sensitivity training across the medical education continuum; (2) establishing guidelines to manage sexually transmitted anal infections; (3) promoting legal and policy reforms to support integration of MSM-appropriate services into healthcare; and (4) including MSM information in national reporting tools for HIV services.</td>
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(continued)
Table E 2. Included Studies for Men Who Have Sex With Men (MSM) (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
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<tbody>
<tr>
<td>38</td>
<td>WHO, UNAIDS 2014</td>
<td>Nonspecific Nonspecific</td>
<td>Health workers in settings with a high prevalence of HIV, key populations at higher risk in all settings</td>
<td>None</td>
<td>This technical update presents information on the potential benefits and risks of HIV self-testing, as well as programmatic approaches, policies and regulatory considerations.</td>
<td>None</td>
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</tbody>
</table>

**Barriers:** Currently there is no WHO normative guidance on HIV self-testing. Research is needed to continuously expand the evidence base on HIV self-testing to inform not the development of national policy and regulations. Key concerns regarding HIV self-testing also apply to all other types of HIV testing. The potential for harm can be minimized if HIV self-testing is provided within a human rights framework, and if it is done with adequate information, regulated and high-quality self-test kits, and community involvement in decision-making.

**Facilitators:** HIV self-testing has the potential to increase access to HIV testing. Populations that may benefit from HIV self-testing include the general population and health workers in settings with a high prevalence of HIV, key populations at higher risk in all settings, and those who frequently retest due to ongoing risk.

| 39       | WHO 2011           | Focused on low- and middle-income countries | Nonspecific | MSM and transgender people | None | The guidelines focus on the prevention and treatment of HIV and other STIs among MSM and transgender people. They include evidence-based recommendations, the summary and grading of evidence, implementation issues and key research gaps. | Indicates that offering HTC, specifically community-based HTC, to MSM and transgender people was strongly recommended, but specified that the recommendation was based on very low quality evidence |

**Barriers:** Currently there is no WHO normative guidance on HIV self-testing. Research is needed to continuously expand the evidence base on HIV self-testing to inform not the development of national policy and regulations. Key concerns regarding HIV self-testing also apply to all other types of HIV testing. The potential for harm can be minimized if HIV self-testing is provided within a human rights framework, and if it is done with adequate information, regulated and high-quality self-test kits, and community involvement in decision-making.

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</thead>
<tbody>
<tr>
<td>40 WHO 2015</td>
<td>Nonspecific Nonspecific MSM, infants and children, adolescents, pregnant women, couples/partners, men, other key populations</td>
<td>None</td>
<td>The Consolidated guidelines on HIV testing services bring together existing guidance relevant to the provision of HTS and addresses issues and elements for effective delivery of HTS that are common in a variety of settings, contexts and diverse populations. Provides a new recommendation to support HTS by trained lay providers, considers the potential of HIV self-testing to increase access to and coverage of HIV testing, and outlines focused and strategic approaches to HTS that are needed to support the new UN 90–90–90 global HIV targets—the first target being diagnosis of 90% of people with HIV.</td>
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<tr>
<td>41 WHO 2015</td>
<td>Nonspecific Nonspecific Young MSM</td>
<td>None</td>
<td>This technical brief is intended for policy-makers, donors, service-planners, service-providers and community-led organizations. This brief aims to catalyze and inform discussions about how best to provide health services, programs and support for young MSM. It offers a concise account of current knowledge concerning the HIV risk and vulnerability of young MSM; the barriers and constraints they face to appropriate services; examples of programs that may work well in addressing their needs and rights; and approaches and considerations for providing services that both draw upon and build to the strengths, competencies and capacities of young MSM.</td>
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</table>

**Facilitators:** HTS by trained lay providers, potentially HIV self-testing to increase access to and coverage of HIV testing, focused and strategic approaches to HTS.

**Barriers:** Young MSM are often more vulnerable than older MSM to the effects of homophobia—manifested in discrimination, bullying, harassment, family disapproval, social isolation and violence—as well as criminalization and self-stigmatization. These can have serious repercussions for their physical and mental health; their ability to access HIV testing, counselling and treatment; their emotional and social development; as well as their ability to access education, vocational training and viable work opportunities.

**Facilitators:**
- Offering community-based, decentralized services through mobile outreach and at fixed locations
- Ensuring services are at easy and safe locations for MSM to reach
- Integrating services with other youth/drop-in center services
- Providing developmentally appropriate information at a young age
- Providing information through peer-based initiatives, using role models with appropriate training
- Ensuring access to appropriate sexual and reproductive health information and medical treatment regardless of marital status and parental consent
- Developing or strengthening protection and welfare services that help parents/guardians to fulfil their responsibilities to effectively protect, care for and support young MSM
- Providing services at times convenient to young MSM and make them free of charge or low-cost
- Ensuring that services are non-coercive, respectful, non-stigmatizing, and make aware confidentiality rights
- Training health-care providers on the health needs of young MSM, as well as relevant overlapping vulnerabilities such as selling sex or drug and alcohol use

(continued)
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<tbody>
<tr>
<td>42</td>
<td>UNFPA, MSMGF, UNDP, WHO, USAID, World Bank 2015</td>
<td>Nonspecific</td>
<td>Nonspecific</td>
<td>MSM</td>
<td>None</td>
<td>This document is a tool containing practical advice on implementing HIV and sexually transmitted infection (STI) programs with MSM. The tool is designed for use by public-health officials, managers of HIV and STI programs, NGOs—including community and civil-society organizations—and health workers. It is based on recommendations contained within the Consolidated guidelines on HIV prevention, diagnosis, treatment and care for key populations, published in 2014</td>
<td>None</td>
</tr>
<tr>
<td>43</td>
<td>Mlawa 2015</td>
<td>Tanzania</td>
<td>Unspecified</td>
<td>FSW and MSM</td>
<td>Unspecified</td>
<td>FSW and MSM participated in one-day consultation meetings.</td>
<td>Unspecified</td>
</tr>
<tr>
<td>44</td>
<td>Tindwa 2015</td>
<td>Tanzania</td>
<td>Unspecified</td>
<td>Parents of MSM</td>
<td>7 meetings, participant numbers unspecified</td>
<td>Conducted 7 meetings where parents of MSM and other family members were invited to take part in presentations and discussions pertaining to same-sex attractions, HIV and health. Discussions included a) What is Sexual Orientation and Gender Identity b) Do I know the sexual orientation and gender identity of my child? c) How is SOGI issues related to HIV/AIDS d) How can I be of any help to my children with SOGI issues related to HIV/AIDS?</td>
<td>Convenience</td>
</tr>
</tbody>
</table>

Facilitators: Topics covered include community empowerment, addressing violence, condom and lubricant programming, other health-care services, and service delivery.

Barriers: Daily concerns of MSM included physical security, rectal diseases, family rejection, and limited business opportunities. MSM reported unfamiliarity of providers with rectal conditions, and unavailability of lubricants.

Facilitators: MSM prefer health services at night and at private venues, expressed interest in economic empowerment interventions.

Barriers: Broader community is lacking knowledge on SOGI issues and how this can lead to one being exposed to HIV/AIDS.

Facilitators: Broader community can be supportive to their children once they understand the real issues related to SOGI, help their children to understand themselves better and abstaining from behaviors that may expose one to HIV/AIDS.

Note: AHI = acute HIV-1 infection; AEHI = acute and early HIV-1 infection; aOR = adjusted odds ratio; ART = antiretroviral therapy; CBO = community-based organization; CHPI = combination HIV prevention intervention; CI = confidence interval; CVCT = couples voluntary counseling and testing; FGD = focus group discussion, FSW = female sex worker; GBMSM = gay, bisexual, and other men who have sex with men; HCW = health care worker; HCP = health care professional; HCT = HIV counselling and testing; HIV = human immunodeficiency virus; HTS = HIV testing services; IDI = in-depth interview; IDU = injection drug user, LGB = lesbian, gay, bisexual; LGBT = lesbian, gay, bisexual, and transgender; MSM = men who have sex with men; MSMGF = Men Who Have Sex With Men Global Forum; MSW = male sex workers/men who have sex with women; NA = not available; NASCOP = National AIDS & STI Control Programme; NGO = non-governmental organization; PWID = people who inject drugs; RDS = respondent-driven sampling; SOGI = Sexual Orientation and Gender Identity; STI = sexually transmitted infection, UAI = unprotected anal intercourse; UN = United Nations; UMRRSS = University of North Carolina-Malawi Risk Screening Score; UNDP = United Nations Development Programme; UNFPA = United Nations Population Fund; UNAIDS = Joint United Nations Programme on HIV/AIDS; USAID = United States Agency for International Development; VCT = Voluntary Counseling and Testing; WHO = World Health Organization; WSW = women who have sex with women
Table E-3. Included Studies for People Who Inject Drugs (PWID)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year, Title</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
<th>Intervention Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mlunde LB 2016</td>
<td>Tanzania</td>
<td>Kinondoni, Ilala, Temeke</td>
<td>PWID who were new enrollees of methadone-assisted treatment program and community-recruited PWID</td>
<td>578</td>
<td>Cross-sectional quantitative survey</td>
<td>Convenience sampling of PWID who were new enrollees of methadone-assisted treatment program and snowball sampling of community-recruited PWID not enrolled in program</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>A mismatch between high-risk behaviors and screening of infectious diseases among people who inject drugs in Dar es Salaam, Tanzania.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Barriers/Facilitators:** Factors associated with ever being screened for HIV included having an education level higher than primary education (AOR: 2.54, 95% CI: 1.54–4.20); having a history of transactional sex (AOR: 2.63, 95% CI: 1.01–6.84); and being a new enrollee of the integrated MMT program (AOR: 7.41, 95% CI: 4.26–12.86).

| 2        | Parry CD 2010              | South Africa | Durban, Cape Town, Pretoria | PWID and NGO/CBO providers | PWID: 178 and NGO/CBO providers: 30 | Cross-sectional qualitative study (semi-structured interviews and focus groups) in two phases | Purposeful sampling | None |
|          | Opportunities for enhancing and integrating HIV and drug services for drug using vulnerable populations in South Africa |         |               |            |    |        |          |                          |
|          | Phase 1 of the study found that (1) study participants were interested in accessing VCT; (2) 60% of people who inject drugs agreed to HIV testing and many reported having been tested in the past; (3) motivations for testing in the past included high-risk sexual or drug use behavior, having an HIV-positive friend or partner, and being treated for other STIs. Drug users in the study expressed experiencing stigma, having perceptions that services were not accessible to them based on their drug-using status, and that service providers and mobile clinic staff were hesitant to visit areas where drug users frequent. In Phase 2 of the study, participants identified that VCT should be offered at drug treatment centers. |         |               |            |    |        |          |                          |

| 3        | Mlewa K 2015               | Kenya | 5 high drug burden areas | PWID from 5 project implementation sites | 188 respondents from a sampling frame of 6000 PWID | Quasi-experimental study utilizing a cross-sectional survey design before and after an unspecified intervention, without comparison | Random drawing from sampling frame | Unspecified |
|          | Understanding low threshold HIV testing for people who inject drugs in Kenya |         |               |            |    |        |          |                          |
|          | Outcomes: 98.2% of PWID had ever received HIV testing after the intervention, compared with 60% before the intervention; 90% reported knowledge about the importance of HIV testing; and 96% reported preference for outreach-based HIV testing services. The proportion of PWID who have taken an HIV test 3 months after exposure to a risky sexual contact was less than 26.3% before the intervention and 58% after the intervention. |         |               |            |    |        |          |                          |

| 4        | Tran OC 2015               | Tanzania | Dar es Salaam | HIV-positive methadone maintenance treatment clients | 148 | Retrospective cohort study | Routine programmatic and clinical data on clients enrolled in methadone between February 2011 and January 2013 | None |
|          | Linkage to care among methadone clients living with HIV in Dar es Salaam, Tanzania. |         |               |            |    |        |          |                          |
|          | Barriers/Facilitators: Factors associated with improved linkage to care included a higher methadone dose (≥85mg) and self-reported poor health; and clients with a history of arrest were less likely to have received a CD4 count. |         |               |            |    |        |          |                          |
### Table E-3. Included Studies for People Who Inject Drugs (PWID) (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year, Title</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
<th>Intervention Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Saleem HT 2015 &quot;Can’t you initiate me here?&quot; Challenges to timely initiation on antiretroviral therapy among methadone clients in Dar es Salaam, Tanzania</td>
<td>Tanzania</td>
<td>Dar es Salaam</td>
<td>HIV-positive methadone maintenance treatment clients and providers</td>
<td>Methadone clients: 20 and providers: 12</td>
<td>Qualitative study</td>
<td>Purposeful sampling</td>
<td>None</td>
</tr>
<tr>
<td><strong>Barriers/Facilitators:</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>6</td>
<td>Lambdin BH 2013 Identifying programmatic gaps: inequities in harm reduction service utilization among male and female drug users in Dar es Salaam, Tanzania</td>
<td>Tanzania</td>
<td>Dar es Salaam</td>
<td>Patients who received community-based outreach services from four CBOs</td>
<td>8,578 outreach contacts</td>
<td>Cross-sectional quantitative survey</td>
<td>Electronic databases from four CBOs and methadone maintenance clinic; clients enrolled in methadone maintenance clinic</td>
<td>None</td>
</tr>
<tr>
<td><strong>Barriers/Facilitators:</strong></td>
<td></td>
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<tr>
<td>7</td>
<td>Mtetwa 2013 &quot;You are wasting our drugs&quot;: Health service barriers to HIV treatment for sex workers in Zimbabwe</td>
<td>Tanzania</td>
<td>Dar es Salaam</td>
<td>Patients and their providers at a methadone-assisted therapy clinic</td>
<td>19 patients and 6 providers</td>
<td>Qualitative/ethnographic study</td>
<td>Snowball sampling</td>
<td>None</td>
</tr>
<tr>
<td><strong>Barriers/Facilitators:</strong></td>
<td></td>
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</tr>
<tr>
<td>8</td>
<td>Kamuti SM 2013 Breaking the barrier: reaching the “hard to reach” population (PWIDS)</td>
<td>Kenya</td>
<td>Nairobi</td>
<td>PWID</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Drop-in center for PWID</td>
</tr>
<tr>
<td><strong>Outcomes:</strong></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>9</td>
<td>Kamuti SM 2013 PWID Peer educators model strengthening the referral system for people who inject drugs</td>
<td>Kenya</td>
<td>Nairobi</td>
<td>PWID</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Peer educator model for PWID</td>
</tr>
<tr>
<td><strong>Outcomes:</strong></td>
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</tbody>
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(continued)
Table E-3. Included Studies for People Who Inject Drugs (PWID) (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year, Title</th>
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<th>Population</th>
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<th>Design</th>
<th>Sampling</th>
<th>Intervention Implemented</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Han Z 2015</td>
<td>Tanzania</td>
<td>Dar es Salaam</td>
<td>PWID</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Unavailable</td>
<td>Micro-planning process to decentralize outreach management and planning, which involves PWID</td>
</tr>
</tbody>
</table>

**Outcomes:** Using micro-planning process, access to harm reduction services among PWID has increased fourfold
Table E-4. Included Studies for Adolescent Girls and Young Women

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Kabiru 2011</td>
<td>Kenya</td>
<td>Korogocho and Viwandani slum settlements in Nairobi</td>
<td>Young people aged 12-22</td>
<td>4,028 total 1,991 female</td>
<td>Cross-sectional survey</td>
</tr>
<tr>
<td>3</td>
<td>Chung 2015</td>
<td>Malawi, Zimbabwe</td>
<td>—</td>
<td>Young mothers aged 15-22</td>
<td>4,042 Malawi 1,330 Zimbabwe</td>
<td>Retrospective data analysis of DHS data</td>
</tr>
<tr>
<td>4</td>
<td>Knight 2014</td>
<td>South Africa</td>
<td>Vulindlela KwaZulu-Natal</td>
<td>Young people aged 18-32 who reported ever having sex</td>
<td>2,255 total 1,330 female</td>
<td>Cross-sectional survey</td>
</tr>
</tbody>
</table>

**Facilitators:** Factors associated with having been tested for HIV in a multivariate model among females: age (aOR 1.27, 95% CI: 1.20-1.35), ever having been pregnant (aOR 7.29, 95% CI: 4.61-11.53), ever having had sex (aOR 2.37, 95% CI: 1.67-3.36), and religion (Muslim aOR 0.37 compared to Catholic, 95% CI: 0.21, 0.65). Motivations for testing: those who had never had sex were not tested because they were not sexually active (42.7%) or not at risk for other reasons (29.6%). Among those who had had sex, females reported that they had not tested because they were not at risk (44.4%), or they did not want to know their status (17.4%). About 60% of females who had ever had sex received an HIV test because they were pregnant or because testing was part of prenatal care.

**Barriers:** Criminalization, stigma, and discrimination can deter MSM from accessing HIV services and information. Furthermore, criminalization perpetuates stigma and discrimination against MSM.

**Facilitators:** Effective HCT requires nonjudgmental support and high-quality services specifically designed to address the needs of MSM.

**Intervention Outcomes:** The outcome was the cited work: Policy analysis and advocacy decision model for services for key populations in Kenya.

**Facilitators:** In multivariate models including an antenatal care variable, no demographic, social, or attitudinal variables were significant predictors of HIV testing (p=0.000). The odds ratios indicate that, holding all other variables constant, when a young mother in Malawi is offered HIV testing during her antenatal visit, she is approximately 12 times more likely to get tested for HIV than one who is not; a young mother in Zimbabwe is 286 times more likely to get tested for HIV when offered it as a part of her antenatal visit.

**Facilitators:** Factors significantly associated with having had an HIV test: Having children (aOR 2.11, 95% CI: 1.55-2.88), having had a discussion about HIV (aOR 3.36, 95% CI: 2.50-4.53), having a high perception of antiretroviral therapy (aOR 1.63, 95% CI 1.17-2.26).

(continued)
### Table E-4. Included Studies for Adolescent Girls and Young Women (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
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<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Peltzer 2013</td>
<td>South Africa</td>
<td>KwaZulu-Natal, Mpumalanga, Eastern Cape, and Gauteng provinces</td>
<td>Young people aged 18-24</td>
<td>3,127 total</td>
<td>1,420 female</td>
<td>Cross-sectional population-based</td>
</tr>
<tr>
<td>Facilitators: Factors associated with HIV testing in multivariate model: older age (aOR 1.001, 95% CI: 1.00-1.001), being female (aOR 3.70, 95% CI: 2.56-5.00), having ever talked to the mother or female guardian about HIV (aOR 1.88, 95% CI: 1.42-2.49), having ever been pregnant or made someone pregnant (aOR 5.71, 95% CI: 3.27-9.97), knowing someone living with HIV and a person who has died from AIDS (aOR 1.79, 95% CI 1.05, 3.06)</td>
<td></td>
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</tr>
<tr>
<td>Barriers: Factors reported by students hindering HIV testing: anxiety and stress (24.2%), trust on my health (19.9%), being busy/lack of time (11.9%), fear of stigmatization (9.7%)</td>
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</tbody>
</table>

| 6        | Carty 2014          | South Africa | Western Cape and Mpumalanga provinces | Adolescents aged 10-17 | 3,401 total | 1,905 female | Cross-sectional survey | Random sample of adolescents across two provinces |
| Barriers: Rural female respondents were less likely to be tested (OR 0.62, p<0.005). |
| Facilitators: Predictors of voluntary counseling and testing among females included pregnancy (OR 7.34, p<0.001), sexual experience (OR 5.58, p<0.001), and age (OR 1.17, p<0.001). Self-reported exposure to school-based HIV testing campaigns were strongly associated with testing among females (OR 7.78, p<0.001). |

| 7        | Sanga 2015          | Tanzania | Arusha City | Secondary school students aged 13-24 | 400 total | 198 female | Cross-sectional survey | Multi-stage sampling to select secondary schools with stratification, random, and systematic sampling techniques to identify study participants |
| Barriers: Factors associated with not testing in a multivariate model included: distance—those who reported that the VCT center was near their area were 60% more likely to test than those who rated it as far. |
| Factors reported by students hindering HIV testing: anxiety and stress (24.2%), trust on my health (19.9%), being busy/lack of time (11.9%), fear of stigmatization (9.7%) |
| Facilitators: Factors associated with testing in bivariate comparisons: being female (OR 1.8, 95% CI: 1.2-2.8), private school (OR 1.8, 95% CI: 1.1-2.7), age over 18 (OR 2.9, 95% CI: 1.8-4.7), non-Christian (OR 1.9, 95% CI 1.1-3.2), exposure to testing information from a testing center (OR 5.65, 95% CI: 3.28-9.71), discussed HIV testing with a sexual partner (OR 3.2, 95% CI 1.3-8.1). |

| 9        | Naidoo 2015         | South Africa | KwaZulu-Natal | Secondary school students aged 14-23 | 1,114 total | 268 female | Cross-sectional survey | One urban and one rural district, five schools in each district randomly chosen, one grade (9-11) chosen randomly for each school and all students invited to participate |
| Facilitators: Factors associated with testing in bivariate comparisons: being female (OR 11.63, 95% CI: 6.66-20.30), being in grade 11 (OR 2.41, 95% CI: 1.32-4.42), having a sexual debut >=15 (OR 2.67, 95% CI: 1.57-4.53), having one or more sexual partners in the past six months (OR 2.15, 95% CI: 1.17-3.98), always using a condom with a non-regular partner (OR 4.21, 95% CI: 1.60-11.09), knew someone who had died from HIV (OR 2.75, 95% CI: 1.57-4.82), knew a person who had tested for HIV (OR 5.27, 95% CI: 2.96-9.41). |
| Factors associated with testing in a multivariate model: being female (aOR 44.90, 95% CI: 7.77-259.38), always used a condom with a non-regular partner (aOR 2.75, 95% CI: 1.01-7.47), and who knew a person who had tested for HIV (aOR 15.28, 95% CI: 5.16-45.23). |
### Table E-4. Included Studies for Adolescent Girls and Young Women (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Frolich 2014</td>
<td>South Africa</td>
<td>KwaZulu-Natal</td>
<td>Secondary school students aged 12-28 (97% under age 20)</td>
<td>2,795 total; 1,450 female</td>
<td>In-school intervention</td>
<td>All students eligible for services, 8 students selected for targeted group meetings</td>
</tr>
</tbody>
</table>

**Intervention Implemented:** Tier 1: in-school group SRH information/awareness sessions; Tier 2: in-school individual SRH counseling and CCT; Tier 3: referrals to in-school fixed, in-school mobile, or public sector primary SRH clinics

**Barriers:** Barriers to HIV counseling and testing were self-reported as: discomfort in communication with adults, lack of adolescent-specific services, cost implications of travel to clinics, incompatibility of school and clinic open hours, and concerns about confidentiality.

**Facilitators:** Main reasons for engagement with HIV counseling and testing were self-reported as engaging in unprotected sex, concerns surrounding caring for HIV-positive household members, and experience of some form of sexual abuse.

**Intervention Outcomes:** Throughout the pilot there was a steady uptake of in-school individual counseling and HIV testing. In some schools, limited infrastructure made confidentiality difficult; in-school mobile services were preferred.

| 11       | Munthali 2013      | Malawi | Lilongwe, Thyolo, and Zomba districts | Female secondary school students aged 15-19 | 457 questionnaires; 18 focus group discussions; 45 in-depth interviews | Cross-sectional survey and focus group discussions |

**Barriers:** Reasons reported for not testing for HIV: not sexually active or low perceived risk, don’t want to know status due to fear of stigma or discrimination or reaction of parents and friends, assumptions about the types of girls who go for testing, disadvantages of finding out you’re infected and impact on future plans.

**Facilitators:** Reasons reported for testing: 87% want to know their status. Few girls were encouraged by parents, peer educators, or counselors.

| 12       | Dalal 2013         | Kenya | Rural western Kenya (Lwak) and informal urban settlement in Nairobi (Kibera) | All household members aged 13 or older | 24,450 total; 5,105 female aged 13-24 | Community intervention | All participants in a population-based infectious disease surveillance program were offered the option to participate |

**Intervention Implemented:** Large home-based testing and counseling program—community mobilizers made appointments for home-based testing, guided counselors to homes, and introduced the counselor to participants.

**Barriers:** Reasons for refusing HIV test: fear of knowing one’s HIV status (17.4%), previously known HIV status (15.2%), preferring to test away from home (13.5%), and wanting to test later (13.1%).

**Facilitators:** Among those who accepted testing, planning for the future was the main motivation for accepting the service (84.9%).

**Intervention Outcomes:** Home-based testing and counseling implemented by trained lay counselors was an effective strategy for achieving high coverage of testing and of reaching people with previously undiagnosed HIV infection.

Acceptance among females 13-17 years was 90.8% and 84.2% in Kibera and Lwak. Acceptance among females 18-24 years was 89.0% and 79.6% in Kibera and Lwak. Acceptance rates were higher among youth than adults.
### Table E-4. Included Studies for Adolescent Girls and Young Women (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Kabiru 2010</td>
<td>Kenya</td>
<td>Kisumu</td>
<td>Young people aged 18-24</td>
<td>A356 total 210 female</td>
<td>Retrospective survey</td>
<td>Every other household in 45 randomly selected urban enumeration areas out of 400</td>
</tr>
<tr>
<td>14</td>
<td>Baisley 2012</td>
<td>Tanzania</td>
<td>20 rural communities in northwest</td>
<td>Young people who were in primary school in 1999-2002 (85% under age 25)</td>
<td>12,590 total 5,628 female</td>
<td>Cross-sectional survey with voluntary counseling and testing</td>
<td>All eligible young people identified during a household census invited to participate</td>
</tr>
<tr>
<td>15</td>
<td>Madiba 2015</td>
<td>South Africa</td>
<td>Gauteng and North West provinces</td>
<td>Secondary school students aged 14-27</td>
<td>2,970 total 1,634 female</td>
<td>Cross-sectional survey</td>
<td>17 high schools randomly selected from 56 schools</td>
</tr>
<tr>
<td>16</td>
<td>Mwangi 2014</td>
<td>Kenya</td>
<td>Two public and two private universities in urban or sub-urban areas</td>
<td>University students, 91% aged 17-24</td>
<td>980 total 513 female</td>
<td>Self-administered questionnaire</td>
<td>All students at selected universities</td>
</tr>
<tr>
<td>17</td>
<td>Tsague 2014</td>
<td>Zambia</td>
<td>—</td>
<td>Young people aged 10-24</td>
<td>515,228 total contacted</td>
<td>SMS poll of Zambia U-report registered users</td>
<td>Participants randomly selected from 40,000 registered users aged 10-24</td>
</tr>
</tbody>
</table>

**Facilitators:** Among non-pregnant females urban residence and marital aspirations were positively and significantly associated with HIV testing (females who were not married but wished to marry were more likely to test than unmarried females who did not wish to marry, HR 1.73, 95% CI: 1.04-2.88). Among females who were pregnant at their first HIV test, age (HR 0.40, 95% CI: 0.17-0.96), earning income (HR 0.52, 95% CI: 0.29-0.92), and having had unprotected sex in the six months preceding the test were (HR 8.3, 95% CI: 3.40-20.33) were significantly associated with HIV testing.

**Intervention Implemented:** Individuals doing survey offered HIV testing either using an opt-in or opt-out strategy.

**Facilitators:** Factors associated with testing uptake among females in opt-out strategy in unadjusted analyses: sex with a casual partner in the past 12 months in an unadjusted model (OR 1.53, 95% CI: 0.98, 2.37)

**Intervention Outcomes:** Uptake was significantly higher among participants offered the opt-out strategy than those offered opt-in (90.9 vs. 60.4%, p<0.001). Uptake was higher in all age, sex, and sociodemographic categories.

**Barriers:** Reasons reported for not getting tested: fear of positive results (17.2%), having no need for testing (16.5%), being sexually inexperienced (13.5%), not sure where to go for testing (11.9%), convinced they were HIV negative (14.8%) 

**Facilitators:** Reasons they reported for not wanting to test at school: being scared (23.5%), school is not the right place for testing (14.4%), unwillingness to be tested (9.7%), fear of gossip (7.7%), lack of privacy (9.1%)

**Intervention Outcomes:** More girls (78% vs. 75%) thought that having HTC at school was a good idea, and 76% of girls versus 67% of boys were willing to use HTC services at school.

**Barriers:** 45% considered going for HCT extremely frightening, only 49.9% felt providers could be trusted with their information, and only 52% felt they could comfortably talk to a counselor about personal behaviors. Low risk perception: 39.9% of these students disagreed with the statement “I am at risk for HIV and AIDS” with only 36.8% agreeing that they were at risk.

**Barriers:** The main barrier to HTC reported by SMS was fear of a positive test result (65% among age 10-14, 83% among age 15-19, 84% among age 20-24). Lack of awareness of the importance of HTC was highest among younger adolescents (14% among age 10-14, 8% and 5% among older groups).
### Table E-4.  Included Studies for Adolescent Girls and Young Women (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
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<tr>
<td></td>
<td>Barriers:</td>
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</tr>
<tr>
<td></td>
<td>Conspiracy beliefs and potentially mistrust in government institutions and healthcare</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>19</td>
<td>Sweat 2011</td>
<td>Tanzania, Zimbabwe&lt;br&gt;Kisarawe District&lt;br&gt;Tanzania, Mutoko District&lt;br&gt;Zimbabwe</td>
<td>Young people aged 16-32</td>
<td>2,920 total Tanzania&lt;br&gt;1,249 female Tanzania&lt;br&gt;6,039 total Zimbabwe&lt;br&gt;2,900 female Zimbabwe</td>
<td>Voluntary counseling and testing utilization data for persons aged 16 and older in 10 matched communities in Tanzania and 8 matched communities in Zimbabwe</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Intervention Implemented: Project Accept: community mobilization activities, easily accessible mobile HIV VCT, community-based post-test support services</td>
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<tr>
<td></td>
<td>Intervention Outcomes: In Tanzania, four times more clients in intervention communities utilized HIV testing services (2,341 vs. 579 respectively), in Zimbabwe uptake was 9 times greater (5,437 vs. 601). The mean client age was slightly lower among those testing in intervention communities (Tanzania: 22.7 vs. 23.8 p&lt;0.001; Zimbabwe: 22.2 vs. 24.2, p&lt;0.001). The percentage of those testing for HIV age 16-17 years was markedly higher in intervention communities as compared to control in all sites (Tanzania: 15.8% vs. 8.5%, p&lt;0.001, Zimbabwe: 21.7% vs. 8.2% p&lt;0.001). No gender effect observed.</td>
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</tr>
<tr>
<td>20</td>
<td>Kadede 2016</td>
<td>Kenya</td>
<td>rural communities in western Kenya</td>
<td>Young people aged 10-24</td>
<td>98,694 total</td>
<td>Community intervention</td>
<td>Door-to-door census, with adolescents reporting stable residence (at least six months in the community) eligible</td>
</tr>
<tr>
<td></td>
<td>Intervention Implemented: Hybrid testing strategy of 2-week mobile, multi-disease community health campaigns that included HIV testing, counseling, and linkage to care followed by home-based testing over 1-2 months for campaign non-participants.</td>
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</tr>
<tr>
<td></td>
<td>Intervention Outcomes: HIV testing was achieved in 88% of adolescents, with coverage of 86%, 90%, and 88% in early (10-14 years), mid (15-17), and late (18-24) adolescents respectively. Self-reported prior testing was 9%, 24%, and 50% in these same age groups.</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>21</td>
<td>Mutale 2010</td>
<td>Zambia</td>
<td>Lusaka and Kapiri Mpooshi districts</td>
<td>All household members aged 15-49 years</td>
<td>5,035 total&lt;br&gt;1,440 female aged 15-24</td>
<td>Population-based survey</td>
<td>Stratified random cluster sampling in urban and rural areas</td>
</tr>
<tr>
<td></td>
<td>Intervention Implemented: Home-based HIV counselling and testing.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Intervention Outcomes: Acceptability of home-based testing did not differ by sex, but was higher in rural compared to urban areas. 75% of women aged 15-24 who expressed willingness to be tested were actually counseled and tested with home-based testing. The home-based model of offering counselling and testing had substantial effects in terms of reducing differences in HIV test rates. The home-based model appeared particularly acceptable to young people as indicated by the tenfold increase in the proportion ever tested for HIV among those aged 15-19 in rural areas (from 3% to 25%).</td>
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</tr>
</tbody>
</table>

(continued)
Table E-4. Included Studies for Adolescent Girls and Young Women (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Wachira 2014</td>
<td>Kenya</td>
<td>Western Kenya</td>
<td>All household members aged 13 or older</td>
<td>63,376 aged 13-24</td>
<td>Retrospective study</td>
<td>—</td>
</tr>
</tbody>
</table>

**Intervention Implemented:** Academic Model Providing Access to Healthcare (AMPATH) home-based HIV counseling and testing program.

**Intervention Outcomes:** Very high testing uptake, with testing highest among adolescents aged 13-18 (99.1%) and young adults aged 19-24 (98.3%) compared to older adults (93.9%) (p<0.001). No gender effect among adolescents; young adult females less likely to test than young adult males.

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>Dancy 2014</td>
<td>Malawi</td>
<td>Two rural districts</td>
<td>Young people aged 13-19</td>
<td>777 total 370 female</td>
<td>Quasi-experimental two group research design with pre- and post-intervention community surveys</td>
<td>Households randomly selected from a census of all households</td>
</tr>
</tbody>
</table>

**Intervention implemented:** Seven weekly two-hour sessions focused on enhancing HIV knowledge, attitude about HIV, self-efficacy for condom use and safe sex, HIV risk reduction.

**Intervention Outcomes:** Adolescent females 16-19 in the intervention community were significantly more likely to have an HIV test in the past 12 months (23.94% vs. 4.65%, p<0.01). Among females aged 13-15 there was not a significant difference in HIV testing in the past 12 months (3.36% intervention community vs. 0.96% control). Males benefitted more from the intervention.

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Matthews 2015</td>
<td>South Africa</td>
<td>Western Cape</td>
<td>Grade 8 students, mean age 13.7 years</td>
<td>3,451 total</td>
<td>Randomized controlled trial</td>
<td>42 randomly selected schools, randomly allocated to intervention or control</td>
</tr>
</tbody>
</table>

**Intervention Implemented:** 21-session after-school sexual health educational program, school health service, and school sexual violence prevention program.

**Intervention Outcomes:** At 12 months there were no differences in HIV testing uptake in the past year between intervention (28.5%) and control (20.0%) (OR 1.44, 95% CI: 0.90-2.32).

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Mugo 2015</td>
<td>Kenya</td>
<td>Mtwapa area of coastal Kenya</td>
<td>Pharmacy clients aged 18-29</td>
<td>1,490 total 681 total aged 18-24 706 total female</td>
<td>In-pharmacy intervention</td>
<td>Five pharmacies with high client loads selected out of 20 pharmacies included in a previous survey</td>
</tr>
</tbody>
</table>

**Intervention Implemented:** Pharmacy clients referred to any of five participating clinics for free HIV-1 testing and screening for the acute HIV infection (AHI) study using a numbered coupon. Pharmacy staff received payments when the client presented at a study clinic, and again if the client was enrolled in the study.

**Intervention Outcomes:** 70% of males and females took a referral coupon. 22% of young people and 24% of females were tested for HIV. Of those, one quarter had not been tested previously.

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>Njuguna 2015</td>
<td>Kenya</td>
<td>Central Kenya</td>
<td>Young women aged 18-24 years</td>
<td>600 female</td>
<td>Quasi-experimental study via SMS, cluster randomized by college</td>
<td>Women who had not tested for HIV in the past 12 months from four colleges</td>
</tr>
</tbody>
</table>

**Intervention Implemented:** Women at two colleges received weekly SMS on HIV related topics with an option to text back for more information (intervention), women from the other two colleges did not receive messages (comparison).

**Intervention Outcomes:** 355 women reported testing for HIV within the 6 months of follow-up: 67% among the intervention and 51% among the control. In adjusted analyses this represented a 52% increase (aOR 1.52, 95% CI: 1.17-1.98)
### Table E-4. Included Studies for Adolescent Girls and Young Women (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Specific Area</th>
<th>Population</th>
<th>N</th>
<th>Design</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>Geibel 2015</td>
<td>Kenya</td>
<td>Nairobi and Voi</td>
<td>Young people aged 15-24</td>
<td>unknown</td>
<td>Randomized controlled trial</td>
<td>Young people purposively sampled and assigned to intervention or comparison</td>
</tr>
</tbody>
</table>

**Intervention Implemented:** Facilitated viewings of Shuga, an HIV prevention-focused television drama series (intervention) or non-facilitated viewings of Shuga (comparison).

**Intervention Outcomes:** Recent HIV testing was significantly associated with increased exposure to the Shuga television series in both the comparison (p = 0.024) and intervention (p = 0.010). Participants in the intervention group who attended 5 or more facilitated sessions reported a substantial increase in HIV testing from baseline (48% vs. 62%, p = 0.016).

Acronyms: aOR = adjusted odds ratio; CI = confidence interval; DHS = Demographic and Health Survey; HR = hazard ratio; NUHDSS = Nairobi Urban Health and Demographic Surveillance System; OR = odds ratio.
### Table E-5. Included Studies for Men

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Population</th>
<th>Study Type</th>
<th>Primary Topic Reviewed</th>
<th>Outcomes Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hensen 2014</td>
<td>sub-Saharan Africa: South Africa (4), Uganda (3), Cameroon (1), DRC (1), Malawi (1), Zimbabwe (1), Swaziland (1), Tanzania (1), Zambia (1), Kenya (1)</td>
<td>Men</td>
<td>Systematic review</td>
<td>Facilitators and barriers to HIV testing</td>
<td>Barriers and facilitators to HIV testing</td>
</tr>
</tbody>
</table>

**Barriers Identified**: Norms around masculinity, which promote a sense of strength inhibit HIV testing because testing is associated with illness and weakness. Healthcare settings also viewed as ‘female domains’ and thus not a place for men (particularly antenatal care settings). Men declined testing for fear of straining marital relationships or inhibiting chances of finding a partner.

**Impact on Uptake of HIV Testing**: Few interventions target men specifically, though all trials showed ‘large and consistent’ effects on men’s uptake of testing. Targeting men through pregnant partners was effective in increasing testing, though overall male attendance at ANC is low, limiting the current reach. Provider-initiated testing was highly acceptable (e.g. 99% of men accepted testing at VMMC services), however this relies on men being engaged with health services and there are many barriers to this (e.g. norms associated with masculinity). Mobile testing and workplace testing have been shown to reach greater numbers of men. Home-based testing was effective at increasing uptake when men were home. HIV self-testing has been shown to be feasible, but less is known about its impact on population-level testing uptake.

**Other Comments**: Not all results apply specifically to men. More exploration of what impacts repeat testing is needed.

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Population</th>
<th>Study Type</th>
<th>Primary Topic Reviewed</th>
<th>Outcomes Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Musheke 2013</td>
<td>sub-Saharan Africa: Mali (1), Uganda (3), South Africa (5), Tanzania (3), Malawi (2), Zambia (2), Nigeria (1), Zimbabwe (1), Ethiopia (1)</td>
<td>Not defined</td>
<td>Systematic review</td>
<td>Uptake of HIV testing</td>
<td>Uptake of HIV testing among men</td>
</tr>
</tbody>
</table>

**Interventions Included**: Targeting men through pregnant partners; targeted partners of newly diagnosed HIV-positive individuals; interventions to increase testing among men attending healthcare facilities (e.g. risk reduction counseling, opt-out testing for TB patients, vouchers); reaching men in communities (e.g. workplace testing, workplace vouchers, community-based education, mobile-testing, home-based testing, vouchers distributed to households)

**Barriers Identified**: Limited male attendance in healthcare settings—may in part be due to gender norms around masculinity that suggest men attending clinics are weak. Reaching men at home is also difficult as they are often not home.

**Facilitators Identified**: Masculine norms can promote testing as men get tested to get on treatment and maintain their status as breadwinners. Men have decision-making autonomy around testing in Uganda and Tanzania. Preparation for marriage was a reason to test among men and women.

**Other Comments**: Many results are not presented by gender, so only those that were are documented. Does conclude that the analysis indicates generalizability across SSA countries. Given the gender dynamics, suggests focusing interventions on social network relationships (e.g. couples).
### Table E-5. Included Studies for Men (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Population</th>
<th>Study Type</th>
<th>Primary Topic Reviewed</th>
<th>Outcomes Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Obermeyer 2013</td>
<td>Burkina Faso, Kenya, Malawi, Uganda</td>
<td>Not defined</td>
<td>Literature review</td>
<td>The ethical issues associated with changes in HIV testing policy and practice</td>
<td>Number and % of individuals ever tested</td>
</tr>
<tr>
<td><strong>Interventions Included:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Approaches to HIV testing (e.g. provider initiated testing within clinical services, task shifting, national campaigns, door-to-door home-based testing, mobile services, integrated rural campaigns, etc.), increases in HIV testing sites</td>
<td></td>
</tr>
<tr>
<td><strong>Barriers Identified:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fear of stigma, lack of confidentiality, long distances to VCT sites, lack of perceived benefits, delays in receiving results. In Malawi, men postpone treatment because of masculine ideas of strength, fear of losing the respect of friends and partners, or that starting treatment would reduce chances of (re)marriage. Men have lower access to health care and thus fewer opportunities to test and get on treatment, which causes delays until symptoms arise.</td>
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</tr>
<tr>
<td><strong>Facilitators Identified:</strong></td>
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<td></td>
<td></td>
<td></td>
<td>Community mobilization and outreach strategies in Malawi, Rwanda, and Zambia increased couples counseling at ANC clinics. Facilitated disclosure programs have also been used to improve disclosure and encourage male testing with some ‘success.’</td>
<td></td>
</tr>
<tr>
<td><strong>Impact on Uptake of HIV Testing:</strong></td>
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<td></td>
<td></td>
<td></td>
<td>increases in HIV testing according to DHS, so not directly linked to changes in policy/implementation (chart displays numbers disaggregated by gender, but exact numbers are not listed).</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Camlin 2015</td>
<td>Kenya, Uganda</td>
<td>Test and treat trial participants</td>
<td>Qualitative study</td>
<td>Barriers to male engagement in HIV testing</td>
<td>Barriers and facilitators to HIV testing</td>
</tr>
<tr>
<td><strong>Barriers Identified:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Structural factors—extended absences from rural households due to informal sector labor opportunities (e.g. traveling long-distances to sell fish), power differentials between community elders who lead mobilization efforts; gender norms that promote risk taking and inhibit health seeking; use of female partner testing as ‘proxy’ result</td>
<td></td>
</tr>
<tr>
<td><strong>Other Comments:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IAS abstract only. Concludes that mobile testing could minimize some, but not all barriers</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Roura 2013</td>
<td>Sub-Saharan Africa: Botswana, Kenya, Zambia, Cameroon, Malawi, South Africa, Uganda, Congo, Rwanda</td>
<td>Non-pregnant adults</td>
<td>Non-pregnant adults</td>
<td>Operational implementation of provider initiated testing and counseling (PITC)</td>
<td>Effectiveness in identifying HIV+ cases; Offer and acceptance of testing; Behavioral outcomes of PITC (e.g. risky sexual behaviors); Linkage to treatment; Operational issues</td>
</tr>
<tr>
<td><strong>Interventions Included:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Provider initiated testing and counseling in a variety of clinical settings (e.g. outpatient, ANC, TB, STI, and emergency or surgical departments)</td>
<td></td>
</tr>
<tr>
<td><strong>Barriers Identified:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Male attendance at health clinics is lower than female attendance; can infer by results that provider initiation to offer tests is also lower than there is a provider associated barrier with implementing PITC, especially with male clients.</td>
<td></td>
</tr>
<tr>
<td><strong>Impact on Uptake of HIV Testing:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Several studies reported that males were less likely to attend health facilities, be offered a test if they did attend, and to accept the test (not quantified). A Uganda study that showed high disclosure to partners (above 85%), suggested that partner uptake of testing was low.</td>
<td></td>
</tr>
<tr>
<td><strong>Impact on Linkage to Care:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>None reported for general male populations</td>
<td></td>
</tr>
<tr>
<td><strong>Other Comments:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Most results not specific to men and/or not disaggregated by gender.</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
Table E-5. Included Studies for Men (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Population</th>
<th>Study Type</th>
<th>Primary Topic Reviewed</th>
<th>Outcomes Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Govindasamy, 2012</td>
<td>Sub-Saharan Africa: South Africa (16), Uganda (7), Kenya (5), Malawi (3), Ethiopia (2), Tanzania (2), Zambia (2), Rwanda (1), Swaziland (1), Mozambique (1)</td>
<td>Home-based testers, FSWs, patients accessing mobile HIV testing, patients accessing public healthcare facilities</td>
<td>Literature review</td>
<td>Barriers and facilitators to linkage to ART</td>
<td>Predictors for retention and linkage to ART; Barriers to accessing and remaining in HIV care</td>
</tr>
</tbody>
</table>

**Barriers Identified:** Distance to testing center, cost of transport, male sex, younger age, advanced immunodeficiency, lower levels of education; Stigma and fear of disclosure, fear of drug toxicities, transport costs, distance to health facilities, food shortage, patient related time constraints, employed patients unable to take time off, long clinic waiting times, shortage of health care workers, having to complete TB therapy.

**Facilitators Identified:** Disclosing one’s HIV status, perceived poor health, low CD4 count; Provision of referral letters with transport vouchers, community escorts, supportive counseling.

**Other Comments:** The majority of barriers and facilitators were not disaggregated by population and thus it’s unclear which may apply more to men. Being male however was linked to attrition before care and the discussion suggests a need for dedicated clinics and support programs for men.

| 7        | Sharma, 2015        | Sub-Saharan Africa: South Africa, Kenya, Uganda, Malawi, Nigeria, Tanzania | Not defined | Systematic review | Role of community and facility-based HIV testing in addressing gaps in coverage and uptake of testing | Coverage of intervention; uptake of HIV testing; HIV positivity and CD4 counts; linkage to care and retention; cost per person tested |

**Interventions Included:** Community- and facility-based VCT

**Impact on Uptake of HIV Testing:** 25 of the 126 studies reported on the percentage of men tested out of total persons tested. Mobile testing had the highest percentage of men (50%, 95% CI=47-54%); home had the lowest among general population HTC (40%, 95% CI=39-41%). Index partner testing had 41% men (95% CI=20-91%), but a varied by tracing strategy from 50% with active tracing to 15% for passive tracing strategy. Facility VCT and PITC each had 42% (active tracing identified more men, whereas passive tracing identified more women).

**Impact on Linkage to Care:** None reported for general male populations

**Other Comments:** Concludes that community based VCT reached many targets, including men, more successfully and with higher coverage than facility based testing. Home testing was successful at reaching men, but less so when compared to women (e.g. a study in Botswana reached 85% of women in the target population, but only 50% of men). Mobile testing is the most effective at reaching men in line with their desire to test outside of facilities. Suggests investigating HTC at predominately male settings like workplaces, bars and nightclubs. South Africa was most highly represented. Noted the numbers on uptake of tested were not compared to those offered so it’s difficult to say if number reflect lower levels of coverage of men or greater coverage of women.
### Table E-5. Included Studies for Men (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Population</th>
<th>Study Type</th>
<th>Primary Topic Reviewed</th>
<th>Outcomes Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Kennedy 2013</td>
<td>Low- and middle-income countries: Rwanda (3), Côte d’Ivoire (3), Kenya (2), Zambia (2), Botswana (1), Democratic Republic of Congo (1), Malawi (1), Uganda (1), and Zimbabwe (1), China (2), India (1), Thailand (1)</td>
<td>Not defined</td>
<td>Systematic review</td>
<td>Provider initiated testing and counseling (PITC)</td>
<td>Uptake of HIV testing among individuals receiving PITC and resulting HIV risk behaviors</td>
</tr>
</tbody>
</table>

**Interventions Included:** Interventions where HIV testing was initiated by providers, opt-in and opt-out, in a health care setting where individuals were seeking care other than HIV testing.

**Impact on Uptake of HIV Testing:** ANC/FP/postpartum care: no difference in partners testing in Zimbabwe opt-out approach.

The remaining interventions either did not disaggregate data for men (e.g. TB clinics, outpatient clinics, methadone maintenance clinics) and/or reported on risk behaviors (e.g. condom use) of those who accepted PITC, but not on uptake of testing (STD clinics).

**Other Comments:** Concludes that PITC has clear benefits for HIV testing uptake, but no studies specifically looked at men; studies addressing women (e.g. in female associated care settings) don’t seem to consistently address male partners. When they did, there was no difference between opt-in or opt-out testing. Few studies were randomized.

| 9        | Mtande 2014        | Malawi | Pilot test of an intervention | Systematic review | The utility of same-day couples’ HIV testing and counseling and point-of-care CD4 testing as a linkage-to-care strategy for male partners | Engagement in couples counseling; HIV testing uptake; HIV status; POC CD4 testing; linkage to care |

**Interventions Included:** Same day couples’ HIV testing and counseling and point-of-care CD4 testing

**Impact on Uptake of HIV Testing:** 100% of men receiving couples counseling at the ANC clinic were tested for HIV, this represented 12% of all HIV testing among pregnant women at the ANC.

**Impact on Linkage to Care:** Of the 8% (n=81) of men tested who were positive, 27% (n=22) received POC CD4 testing. Of those with CD4 results, 36% (n=8) had a CD4 < 350 cells/mm3 and 63% of these (n=5) presented (on the same day) to an ART clinic adjacent to Bwaila ANC. Of these five, one started ART the same day, one started ART two weeks later, and three did not start ART within 12 weeks.

**Other Comments:** IAS abstract only

(continued)
### Table E-5. Included Studies for Men (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Population</th>
<th>Study Type</th>
<th>Primary Topic Reviewed</th>
<th>Outcomes Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Pottie 2014</td>
<td>USA (3), Tanzania (2), Zambia (1), Thailand (2), South Africa (1), Uganda (1), Kenya (1), Australia (1), Zimbabwe (1)</td>
<td>People at risk for HIV</td>
<td>Systematic review</td>
<td>Effect of rapid HIV testing on HIV incidence and services</td>
<td>Uptake of HIV testing; Receipt of HIV test results; Repeat HIV testing and test incidence rate; HIV incidence; Treatment programme uptake; HIV related stigma</td>
<td></td>
</tr>
</tbody>
</table>

**Interventions Included:** Rapid VCT interventions from health facilities and community-based interventions

**Impact on Uptake of HIV Testing:** One RCT in Uganda testing home-based rapid VCT vs. a conventional clinic-based ART, found that women were more likely to uptake HIV testing than men, OR (1.18, 95% CI 1.07 to 1.30).

**Impact on Linkage to Care:** None reported for general male populations

**Other Comments:** Generally since this focused on ‘high risk’ populations, the general male population was not included. The exception was for high incidence countries. Beyond the one HIV testing data point, the only other results disaggregated and presented for a general male population (i.e. not MSM) was lower HIV incidence in the intervention arm (a community-based rapid VCT arm vs. conventional VCT) compared to women in a study conducted in Tanzania, Zimbabwe, and … (19.3% (RR=0.81; 95% CI 0.57 to 1.15, p=0.19) vs. an 11.6% reduction in women (RR=0.89; 95% CI 0.73 to 1.07, p=0.17). However, there is also a note that the evidence around HIV incidence is of ‘low quality.’ Notes that generally studies did not disaggregate data by gender.

<table>
<thead>
<tr>
<th>11 Sabapathy 2012</th>
<th>Sub-Saharan Africa: Uganda (7), Malawi (5), Kenya (2), South Africa (2), Zambia (1)</th>
<th>Not defined</th>
<th>Systematic review</th>
<th>Uptake of home-based VCT</th>
<th>Uptake of HIV testing; Receipt of HIV test results; Linkage to care</th>
</tr>
</thead>
</table>

**Interventions Included:** Home-based VCT and related interventions (incentives, sensitization campaigns, immediate vs. not immediate result provision)

**Facilitators Identified:** Financial incentives, though not presented by impact on gender.

**Impact on Uptake of HIV Testing:** 12 of the 19 studies reported gender disaggregated data. The proportion of men offered HIV testing in these studies ranged from 22-49% with an overall proportion of 47%. Men were as likely as women to accept testing (78.5% [95% CI: 71.1%-86%]) vs. (81.5% [95% CI: 72.9%-90.1%]). The pooled odds ratio of men accepting HBT was 0.84 (95% CI: 0.56-1.26) compared to women.

**Impact on Linkage to Care:** None reported for general male populations

**Other Comments:** Discussion notes that the 47% male proportion of individuals offered home-based VCT is much higher than proportion of males attending clinics, which may be as low as 9%.

<table>
<thead>
<tr>
<th>12 Phiri 2016</th>
<th>Zambia, South Africa</th>
<th>Men</th>
<th>Pilot test of an intervention</th>
<th>Evaluation of use of a male community HIV care providers</th>
<th>Acceptance of intervention and uptake of HIV testing</th>
</tr>
</thead>
</table>

**Interventions Included:** Use of male community HIV care providers (CHIPs) paired with a female

**Impact on Uptake of HIV Testing:** 25,206 out of 27,262 males (92.5%) accepted to take part in the intervention when counseled by MF or MM pairs compared to 49,581 out of 54,192 males (91.5%) with FF pairs (OR 0.88, 95% CI 0.55-1.40). Uptake of HIV-testing by eligible male participants (never tested or self-reported negative) was 29,348 out of 43,136 (68.0%) in pairs with minimally one male CHIP versus 17,857 out of 28,074 (63.6%) in FF pairs (OR 1.22, 95% CI 0.97–1.53).

**Other Comments:** CROI abstract only.

(continued)
## Table E-5. Included Studies for Men (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Population</th>
<th>Study Type</th>
<th>Primary Topic Reviewed</th>
<th>Outcomes Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Krause 2013</td>
<td>Kenya (1), Malawi (1), USA, Spain, Singapore</td>
<td>Not defined, but included studies focused on: health care workers (HCW), men who have sex with men (MSM), injecting drug users (IDU), clients of sexually transmitted infection (STI) clinics, women with multiple sexual partners or HIV seropositive sexual partners and the general population</td>
<td>Literature review</td>
<td>Acceptability of HIV self-testing (HST) defined as proportion of people approached to participate, who performed HST</td>
<td>Acceptance of HIV self-testing, accuracy of HST, utilization of counseling telephone hotline, disclosure of test results, proportion of first-time testers, attitudes and opinions on HST.</td>
</tr>
<tr>
<td>14</td>
<td>Thirumurthy 2015</td>
<td>Kenya</td>
<td>Male partners of women with high HIV risk (reported on via female partners)</td>
<td>Qualitative study</td>
<td>Feasibility and acceptability of male partner HIV self-testing via female partners</td>
<td>Use of self-tests by male partners (self-reported by female partners)</td>
</tr>
<tr>
<td>15</td>
<td>Small 2013</td>
<td>sub-Saharan Africa: Zimbabwe (1), South Africa (9), Gambia (1)</td>
<td>Not defined</td>
<td>Systematic review</td>
<td>Gender based HIV interventions</td>
<td>Biological factors, HIV risk, sexual risk, violence reduction</td>
</tr>
</tbody>
</table>

**Interventions Included:** HIV self-testing

**Barriers Identified:** African studies showed a preference for in-person post-test counseling and services.

**Facilitators Identified:** Women in Malawi felt HST could engage their husbands in testing, but that wasn’t assessed (further research needed on couples).

**Impact on Uptake of HIV Testing:** Acceptability high overall (70% of clients accepted). In Malawi, where HST was offered at home with minimal supervision, uptake was similar for men and women, though men had a lower baseline history of HIV testing.

**Other Comments:** Only two studies were conducted in African settings and few results were disaggregated by gender. Several studies focused on MSM, but results not presented here as that’s the focus of a different population data review. Notes the need for policy shifts around HST, including in South Africa where its legality is ‘disputed.’

**Interventions Included:** HIV self-testing

**Impact on Uptake of HIV Testing:** 77% FSWs, 91.8% antenatal, and 86% postpartum female clients gave at least one self-test to a primary sexual partner; 98% of self-tests given to other persons were reported to have been used.

**Impact on Linkage to Care:** 10.6% (72/681) of those who received self-tests from female partners and used them were reported to obtain an HIV-positive result; 55% of them sought confirmatory testing.

**Other Comments:** IAS abstract only. Reporting of male partner use of self-tests was via female partners and thus is subject to reporting bias.

**Interventions Included:** Any HIV related or HIV risk reduction intervention that include a gender specific component

**Impact on Uptake of HIV Testing:** Two studies that focused on men exclusively reported HIV testing uptake. In one, 23% of men tested for HIV at baseline (Kalichman, 2008). A second study, which compared a GBV/HIV intervention to an alcohol/HIV intervention group found that the GBV focused group was more likely to test at 1 and 3 months. The effect size was 0.07 (CI 0.4-1.1) (Kalichman, 2009).

**Impact on Linkage to Care:** None reported for general male populations

**Other Comments:** Both studies reporting on relevant indicators came from South Africa.
### Table E-5. Included Studies for Men (continued)

<table>
<thead>
<tr>
<th>Study ID</th>
<th>First Author, Year</th>
<th>Country</th>
<th>Population</th>
<th>Study Type</th>
<th>Primary Topic Reviewed</th>
<th>Outcomes Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Mugglin 2012</td>
<td>sub-Saharan Africa: Kenya (4), Malawi (5), Nigeria (1), Rwanda (1), Burundi (1), DRC (1), Congo (1), The Gambia (1), South Africa (14), Ethiopia (1), Mozambique (1), Cameroon (1), Uganda (2)</td>
<td>Adults</td>
<td>Systematic review</td>
<td>To quantify the loss to follow-up between HIV testing and ART initiation in an effort to understand why loss to follow-up occurs</td>
<td>% of patients dying before starting ART, % lost to follow-up, % with CD4 cell count, distribution of first CD4 counts and the % of eligible patients starting ART</td>
</tr>
</tbody>
</table>

**Impact on Linkage to Care:** Of 100 patients who tested positive for HIV, 72 (95% CI 60–84) patients had a CD4 cell count measured, and 40 (95% CI 26–55) were eligible for ART and 25 (95% CI 13–37) started ART. One study found regardless of mode of entry (i.e. voluntary counselling and testing, via antenatal care or from a TB or sexually transmitted infections (STI) clinic), 2-3 days was the median time between HIV diagnosis and CD4 testing. Men were more likely to be lost to program and less likely to start ART than women (specific synthesized data points not presented by gender).

**Other Comments:** Barriers and facilitators to loss to follow-up were not specifically analyzed. The discussion suggests that these aren’t well explored or described in the literature. However the discussion suggests that factors such as timing of CD4 results in relation to HIV testing, and ART eligibility criteria may influence this issue. This is not presented by gender so is not specific to men.